

No. 628,581.

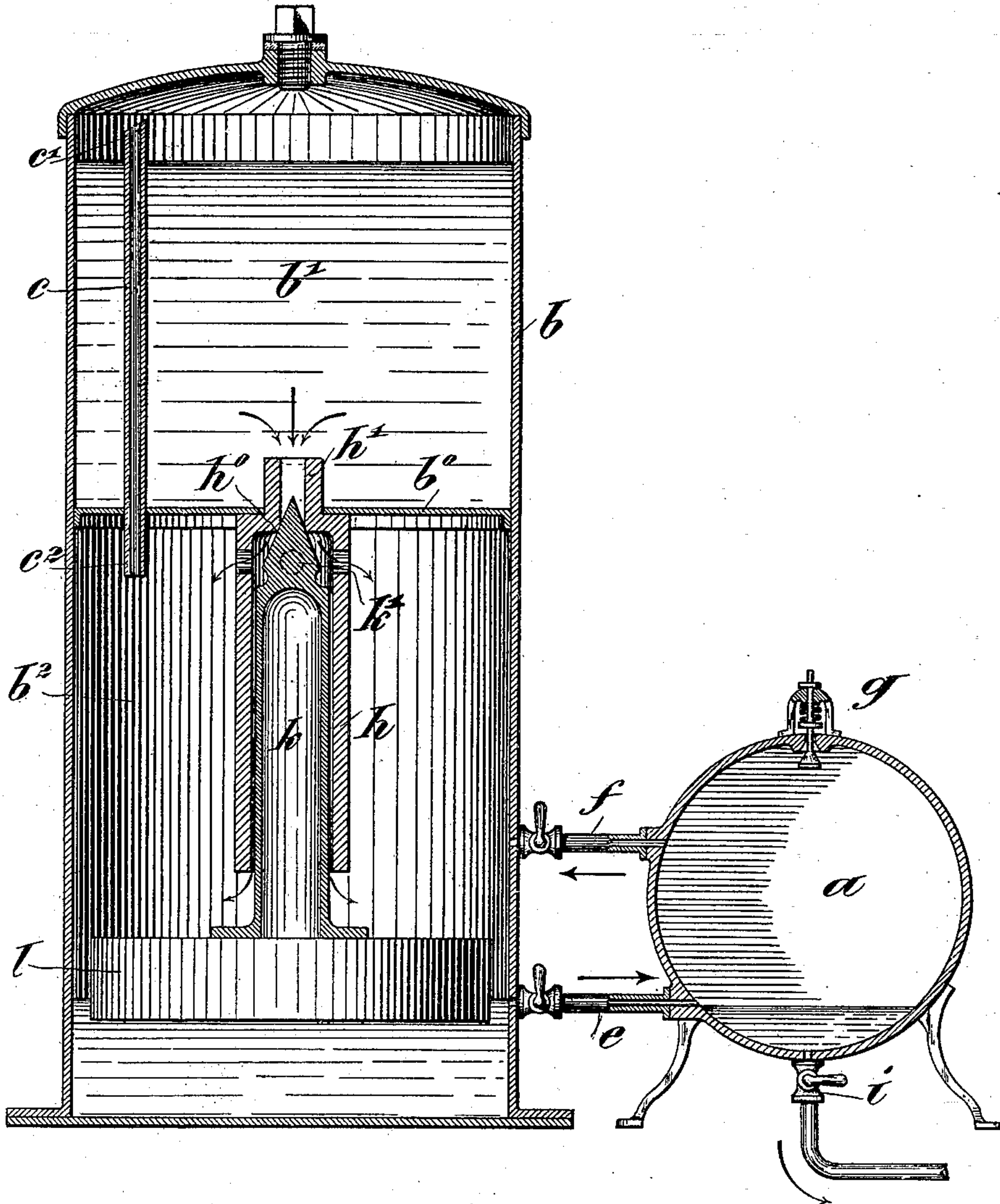
Patented July 11, 1899.

K. GROSSWYLER.

APPARATUS FOR REGULATING THE LEVEL OF LIQUID.

(Application filed Feb. 28, 1899.)

(No Model.)



Witnesses:

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UNITED STATES PATENT OFFICE.

KILIAN GROSSWYLER, OF ZURICH, SWITZERLAND.

APPARATUS FOR REGULATING THE LEVEL OF LIQUID.

SPECIFICATION forming part of Letters Patent No. 628,581, dated July 11, 1899.

Application filed February 28, 1899. Serial No. 707,207. (No model.)

To all whom it may concern:

Be it known that I, KILIAN GROSSWYLER, a citizen of the Republic of Switzerland, and a resident of Zurich, Switzerland, have invented certain new and useful improvements in apparatus to regulate automatically the level of liquid of a supply vessel corresponding to the consumption of the liquid, (for which I applied for a patent in Switzerland on the 24th of December, 1898; in Germany on the 9th of January, 1899; in Austria on the 9th of January, 1899; in Belgium on the 9th of January, 1899; in Italy on the 9th of January, 1899; in France on the 12th of January, 1899; in Hungary on the 14th of January, 1899; in Spain on the 16th of January, 1899; in Great Britain on the 19th of January, 1899, and in Russia on the 23d of January, 1899,) of which the following is a specification.

The present invention relates to an apparatus to regulate automatically the level of liquid of a supply vessel corresponding to the consumption of the liquid.

The preferred method of construction of this apparatus is shown in the inclosed drawing in vertical section.

The vessel in which the liquid is to be continually maintained at about the same level is shown at *a*. This vessel is connected with a special vessel *b*, which is divided into an upper compartment *b'* and a lower compartment *b²* by a partition *b⁰*. The partition *b⁰* is penetrated by a tube *c*, which projects sufficiently far up into the upper compartment for the mouth of the tube or pipe *c'* to lie above the level of the liquid when the upper compartment is as full as it will hold, while the lower end *c²* communicates with the atmosphere of the lower compartment, so that a constant equalization of the pressure of air over the liquid in the compartments *b'* and *b²* takes place. A tubular conductor *h* is fastened into the partition. The largest part of this conductor is placed in the compartment *b²*. Only the upper end of the conductor, which has the shape of a tubular projection of less diameter than the rest of it, passes through the partition *b⁰* and projects into the upper compartment. A connection between the upper and lower compartments is thus formed through which the liquid can flow

from the former to the latter when the lower opening *h⁰* of the short pipe *h'* is free. The part *h* serves as guide for a cylindrical body *k*, which is hollow throughout and goes nearly its entire length and is fastened to a float *l*, and the upper end of which, *k'*, is in the form of a cone. This end serves as a valve for shutting the lower aperture *h⁰* of the short pipe *h'*.

Between the vessel *a* and the lower compartment *b²* a double communication exists. One connected at the level of the liquid *b* will be maintained constant in the vessel *a*, while the other is placed higher up to connect the air-space in vessel *a* and that in the compartment *b²* with one another. The conducting-pipe *e* serves to carry liquid from the compartment *b²* into the vessel *a*, while the pipe *f* equalizes the pressure between the vessel *a* and the compartment *b²*.

The vessel is furnished with a valve *g* to let in air, so that when through the flowing out of the liquid through the outlet-cock *i* the level of the liquid in the vessel *a* lowers, and thereby the air-pressure in vessel *a* is reduced, air can be admitted through the valve *g* by the atmospheric surplus pressure. If, then, through the consumption of liquid the level of the liquid in vessel *a* sinks, a corresponding volume of air is admitted through the valve *g* into the vessel. This air distributes itself by the pipes *f* and *e* to all parts of the apparatus, so that equal pressure over all is continually maintained. Consequently the level of the liquid in the compartment *b²*, together with the float *l*, sinks with the consumption of liquid in the vessel *a*, whereby the lower mouth of the short pipe *h'* becomes released. A corresponding quantity of liquid can therefore flow from the compartment *b'* into the compartment *b²* until the level of liquid in the latter again rises to the same height as before, at which instant the mouth of the short pipe *h'* closes again. The operation continues in this manner with the liquid constantly maintaining itself uniform in the vessel *a* and in the compartment *b²* until all the liquid in the upper store-compartment is finally consumed or has reached the upper aperture of the short pipe *h'*.

Having now particularly described and as-

certained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is—

1. Apparatus for the automatic regulation of the level of liquid in a supply vessel so as to correspond to the consumption of the liquid, characterized by a special vessel b with a receiving-chamber b' above, containing the store of liquid, and a lower chamber b^2 which two chambers are separated from one another by a hermetically-closed partition b^0 and in which in the lower chamber b^2 (in which the same level as that in the supply vessel is to be maintained) there is a float which is provided with a closing device for an opening in the aforesaid partition b^0 for the exit of the liquid, and in which between the lower compartment b^2 and the upper space of the top compartment b' an air-pipe is arranged so that the pipe projects above the highest level of the liquid in the upper or store chamber b' .

2. Apparatus for the automatic regulation of the level of liquid corresponding to the consumption of liquid in a vessel to be supplied with liquid characterized by a special vessel b with upper receiving-chamber b' taking up the store of liquid, and a lower chamber b^2 which two chambers are separated from each other by a hermetically-closed partition b^0 and in which a pressure-equalizing pipe c is between the lower chamber and the upper space of the top chamber, and in the lower

chamber a float with a guide k having a conical end k' enters in the lower opening h^0 of the partition b^0 and leaves the opening more or less free according to the level of the liquid in the lower chamber.

3. Apparatus for the automatic regulation of the level of liquid in a supply vessel so as to correspond with the consumption of the liquid, characterized by the provision of a special vessel b with an upper chamber b' receiving the liquid, and a lower chamber b^2 which two chambers are separated from each other by a hermetically-closed partition b^0 with a float in the lower chamber which is provided with a closing device for an opening in the said partition, and with a pressure-equalizing pipe c between the lower chamber and the top compartment of the upper chamber and with two pipes leading from the lower compartment to the vessel to be supplied of which the one pipe e serves for the flow of liquid, and connects both vessels with each other, and the other f serves for the equalizing of the pressure in the lower chamber b^2 with that in the vessel to be supplied.

In witness whereof I have hereunto set my hand in presence of two witnesses.

KILIAN GROSSWYLER.

Witnesses:

MORITZ VEITH,
A. LIEBERKNECHT.