

No. 728,895.

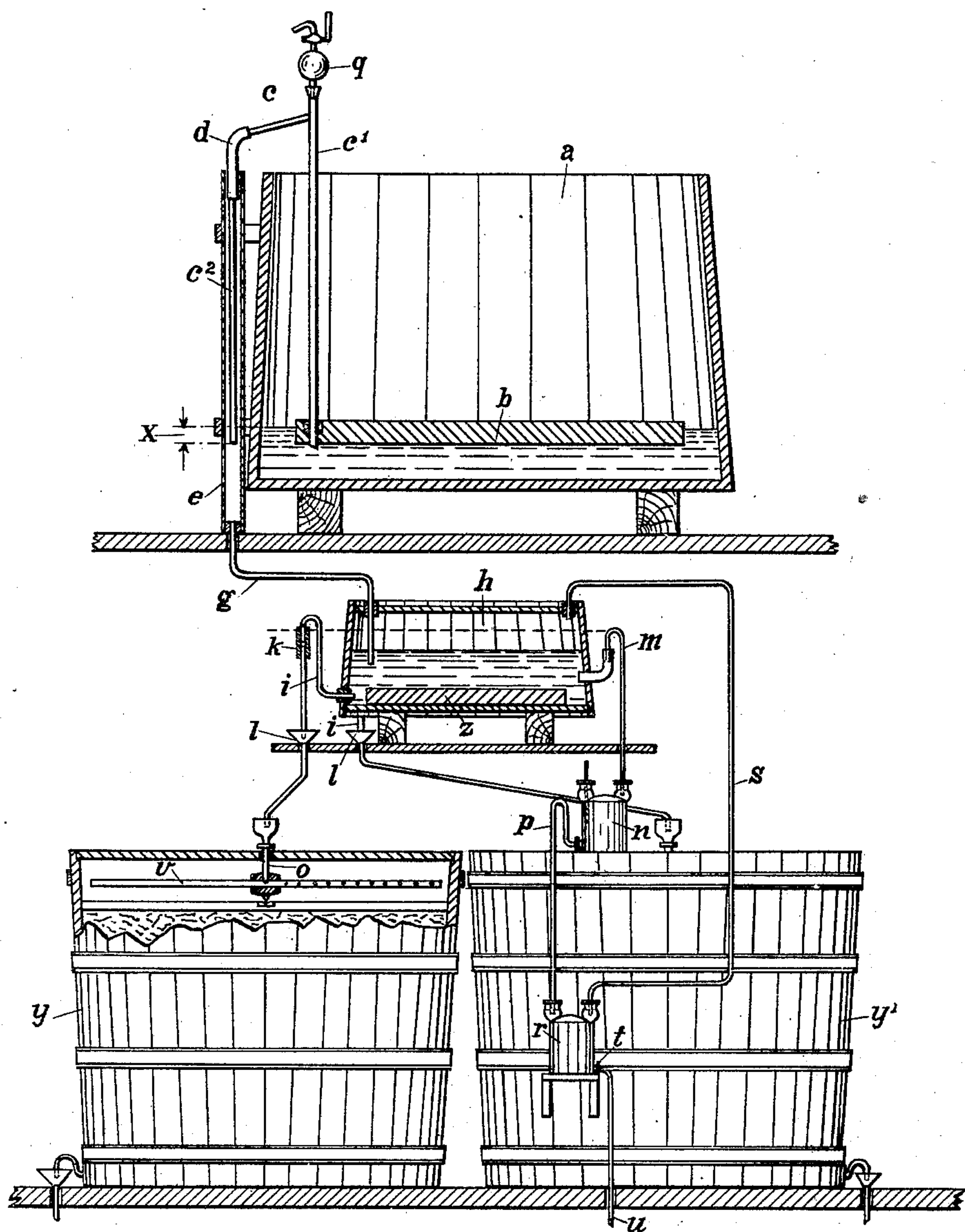
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AUTOMATIC FEEDER FOR VINEGAR GENERATORS.

APPLICATION FILED DEC. 8, 1902.

NO MODEL.



Witnesses:
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UNITED STATES PATENT OFFICE.

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AUTOMATIC FEEDER FOR VINEGAR-GENERATORS.

SPECIFICATION forming part of Letters Patent No. 728,895, dated May 26, 1903.

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To all whom it may concern:

Be it known that I, HEINRICH FRINGS, Jr., vinegar manufacturer, a subject of the King of Prussia, Emperor of Germany, residing at 222 Adalbertsteinweg, Aix-la-Chapelle, in the Kingdom of Prussia, Empire of Germany, have invented certain new and useful Improvements in Automatic Infusion Devices for Graduator; and I do hereby 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.

This invention relates to infusion devices for gradators, and particularly to an automatic infusion device in which only a single evacuation device common to all the gradators of one group is made use of and all movable parts and strangulations are avoided, thus making it possible that by the aid of very simple means a very complete mash-supply to the gradators can be maintained.

In the quick vinegar process, where so-called "Schützenbach gradators" are employed, the liquids to be transformed into vinegar are either by hand or more expediently by mechanically-working infusion devices poured and distributed over the different apparatus. The last-named devices are, however, incomplete, as they are either not self-acting—i. e., require manual assistance to act as required—or they wear out, as they possess movable parts, creating derogatory friction. Other infusion devices are untrustworthy, as the regulation and distribution of the liquids are strangulated on account of the exuberant slimy growth unavoidable in vinegar-mashes, caused by the bacterium xylinum, thus rendering such devices frequently inoperative. All of these drawbacks are fully avoided by the present invention, as it shows no movable parts, avoids all strangulations, and allows of a complete mash-supply by the use of the simplest means, as already indicated above.

The accompanying drawing shows the arrangement of such infusion device suitable for two gradators, partly in section and partly in outline.

In the supply-reservoir *a*, serving for the reception of the mash to be later on transferred to the gradators *y* and *y'*, a swimmer *b* is arranged, carrying a siphon *c*, provided with a ball-shaped chamber *q*. The siphon *c* consists of the two parts *c'* and *c''*, which are united by means of a rubber tube *d*. The part *c''* is movably arranged within the wider tube *e*, from which a branch pipe *g* is leading to the evacuation device *h*. The latter is shown here as a low broad receptacle capable of holding the whole quantity of the liquid used by each infusion of the gradators. Upon the bottom of the evacuation device are arranged radial-leg siphons *i* of equal internal diameter and equal depth of fall, which siphons are likewise provided under their bend with a tube connection *k* in a similar manner as the siphon *c* is. The discharge-legs of the siphons *i* (in the drawing is only the discharge end of the second siphon visible) are reaching into the funnels *l*, placed under them, of which each is connected with the distribution device *v* of the gradator belonging to it by means of a pipe *o*. The distribution device is shown in the drawing as having the shape of the often-employed sprinkling-wheel. Upon the bottom of the discharging receptacle is secured a body *z*, whose use will be explained later on, and sidewise is arranged in any suitable height a little siphon *m*, capable of being adjusted and entering into a two-necked Wulf bottle *n*. This bottle is again connected by a relatively wide siphon *p* with a second Wulf bottle *r*, which is arranged upon a lower plane. From the latter bottle a pipe *s* is returning to the evacuation device *h*, while the bottom branch *t* is provided with a narrow discharge-pipe *u*.

The mode of operation of the arrangement is as follows: The infusion liquid is taken from the supply-reservoir *a* under constant (but at will adjustable) pressure by means of the swimming siphon *c*. The pressure is adjustable, as by moving the leg *c''* in the rubber tube *d* up or down the difference of height in the level of the liquid may be altered accordingly—i. e., the vertical distance *x* between the level of the liquid in the supply-

reservoir *a* and the point of discharge of the leg *c*² can be increased or decreased at will—whereby the velocity of discharge will be increased or decreased accordingly. If there should be any air-bubbles forming, which would interfere with the proper working of the siphon, they will accumulate in the chamber *q* on top of the siphon *c*, from whence they may be removed from time to time. From the swimming siphon *c* the liquid is led to the evacuation device *h* by means of the branch pipe *g* and is fed by the latter until the level of the liquid therein has reached the height of the bend of the siphon *m*. This siphon will now commence to work and fill the bottle *n*, the contents of the latter be quickly transferred to the lower bottle *r* by means of the siphon *p*, and the liquid upon entering the lower bottle will displace the air contained therein and press it into the evacuation device *h* by the aid of the pipe *s*. By doing so all of the siphons *i* will be compelled to start work, and each of the gradators will be supplied with the proper amount of mash. As all the siphons *i* are of the same internal diameter and are working with the same level differences, the quantities of liquid taken by same from the evacuation device *h* must be equal to each other; but these quantities may be varied by varying the level difference by means of the tube connection *k*, so that each graduator may receive at will a greater or lesser quantity of liquid. It is further possible to regulate the contents of the receptacle *h*, and consequently the magnitude of the infusion, by regulating the siphon *m*. The object of the body *z* is to cause a sudden drop of the level of the liquid when same has been nearly drawn off, and thereby an instantaneous ceasing of work of all the siphons *i*. The liquid which has entered the bottle *r* flows slowly off through the pipe *u*, so that the bottle will be filled again with air for the next infusion.

The process described above will be automatically repeated so long as there is any liquid contained in the supply-reservoir *a*.

To put the siphons *i* into action, it is not necessary to use a current of air, as this may just as well be effected by letting some liquid enter the receptacle *h* very suddenly, when the commotion caused thereby will swamp the siphons *i* and set them at work.

I claim—

1. In an automatic infusion device for gradators the combination with a supply-reservoir of a swimming siphon with adjustable leg to obtain diverse level differences, a stand-pipe surrounding said adjustable siphon-leg, a closed evacuation device, a connection between said stand-pipe and said evacuation device, gradators, adjustable siphons for withdrawing the contents of the evacuation device from the latter, distributing means with-

in the gradators, means to lead said withdrawn contents to said distributing means, Wulf bottles placed on different levels, an adjustable siphon connecting the upper Wulf bottle with said evacuation device, a siphon connection between said Wulf bottles, means for draining the lower Wulf bottle, means for connecting the air-space of the lower Wulf bottle with the air-space of the evacuation device, and means for suddenly interrupting the working of the siphons discharging into the gradators.

2. An automatic infusion device for gradators, comprising a supply-reservoir, a swimming siphon placed therein and provided with an air-collecting means and an adjustable leg, a stand-pipe surrounding the latter, an evacuation device, means for leading the liquid discharged by said siphon into said evacuation device, gradators, distributing means in said gradators, means for transferring the infusion liquid from said evacuation device to said distributing means, Wulf bottles placed on different planes below said evacuation device, an adjustable siphon discharging into the upper of said bottles when a desired level has been reached by the liquid in said evacuation device, a siphon discharging the contents of the upper bottle into the lower, means to drain off the liquid from said lower bottle, means for leading the air of the lower bottle into the air-space of the evacuation device, and means in the latter for stopping the working of the means supplying the gradators with infusion liquid suddenly, substantially as shown and described.

3. In an automatic infusion device for gradators the combination of a supply-reservoir with a swimming siphon placed therein and provided with an adjustable leg and an air-collecting chamber, a stand-pipe surrounding said adjustable leg, an evacuation device arranged on a lower level than said supply-reservoir, a pipe connection between said stationary pipe and said evacuation device, gradators placed beneath said evacuation device, distributing means within said gradators, siphons of equal internal diameter and provided with adjustable legs attached to the receptacle of said evacuation device, funnels receiving the liquid discharged by said siphons and leading it to the distributing means arranged within said gradators, a Wulf bottle arranged on a lower plane than the evacuation device, an adjustable siphon attached to the receptacle of said evacuation device and connected with said Wulf bottle, a second Wulf bottle placed on a lower plane than the first, a siphon discharging the liquid of the upper Wulf bottle into the lower Wulf bottle, means to remove the liquid from the last-named bottle, a pipe connecting the lower Wulf bottle with the air-space of the evacuation device for transmitting the air from the

lower bottle to said air-space to create sufficient pressure therein to start the siphons discharging indirectly into the gradulators, and means for breaking off the working of the
5 last-named siphons suddenly, substantially as shown and described.

In testimony that I claim the foregoing as

my invention I have signed my name in presence of two subscribing witnesses.

HEINRICH FRINGS, JR.

Witnesses:

GEORGE SCHAEFER,
JOHN B. ADAMS.