R. H. McMILLEN.

STILL.

APPLICATION FILED JULY 25, 1910.

1,019,069. Patented Mar. 5, 1912.

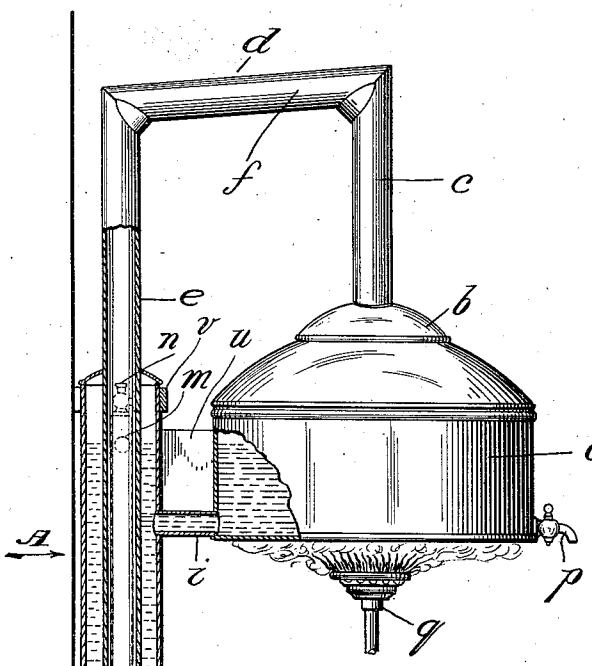

Fig. 1.

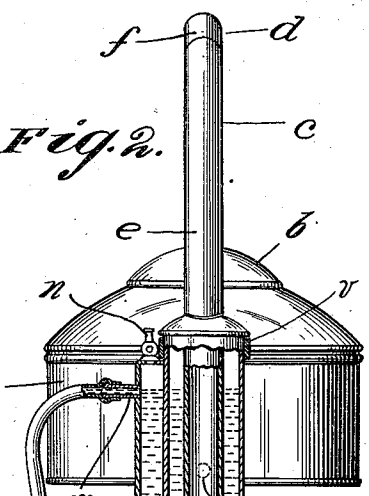

Fig. 2.

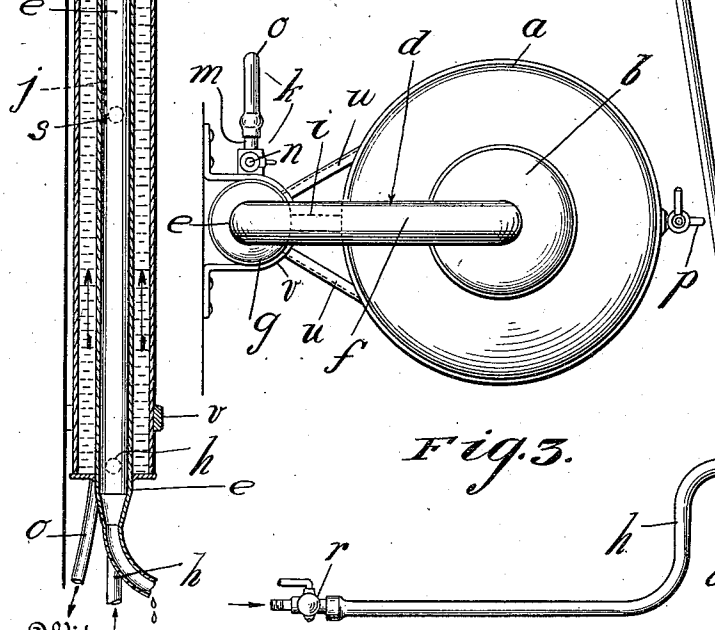

Fig. 3.

Witnesses:
M. Hamilton.
M. Reimer.

Inventor
Russell H. McMillen
By his Attorney
James Hamilton

UNITED STATES PATENT OFFICE.

RUSSELL H. McMILLEN, OF WHEELING, WEST VIRGINIA.

STILL.

1,019,069. Specification of Letters Patent. Patented Mar. 5, 1912.

Application filed July 25, 1910. Serial No. 573,643.

To all whom it may concern:

Be it known that I, RUSSELL H. McMILLEN, a citizen of the United States, residing at Wheeling, in the county of Ohio and State of West Virginia, have invented certain new and useful Improvements in Stills, of which the following is a specification, reference being had to the accompanying drawings.

This invention relates to improvements in stills for domestic and laboratory use; and an object of this invention is to provide a still with means for maintaining the level of the water in the boiler constant despite variations in the pressure of the water-supply.

Another object of this invention is to provide means for controlling the overflow from the water-jacket which surrounds a part of the vapor-pipe.

Other features of this invention will be pointed out in the description which follows.

In the drawings illustrating the principle of this invention and the best mode now known to me of applying that principle, Figure 1 is an elevation of my new still, partly in section; Fig. 2 is an elevation looking in the direction of the arrow A, Fig. 1, and partly in section; and Fig. 3 is a plan.

The boiler *a* is formed with the usual head or dome *b* with which communicates the lower end of the shorter leg *c* of the U-shaped condenser-tube *d*. The longer leg *e* of the latter is connected to the shorter leg *c* thereof by the pipe or conduit *f* which slopes from the upper end of the shorter leg *c* downwardly to the upper end of the longer leg *e*. This downward inclination of the pipe *f* tends to produce a flow from the upper end of the shorter leg *c* to the longer leg *e* of any condensate formed and thereby prevents the latter from falling back into the boiler *a*. The length of the shorter leg *c* is made sufficiently great to prevent priming from the boiler *a*, whereby the purity of the distillate is maintained or preserved.

The lower part of the longer leg *e* of the condenser-tube *d* is incased in a water-jacket *g*, which is structurally connected with the boiler *a* by means of carrier-plates or brace-plates *u* and to which the impure cold water is supplied through the pipe *h* connected to the lower end of the water-jacket. The upper end of the latter is connected with the interior of the boiler *a* near the bottom thereof by the pipe *i* (Fig. 1). Communicating with the water-jacket *g* below the middle thereof through a hole *s* in the wall of the same is the lower end of the shorter leg *j* of a siphon *k*, the upper end of which leg *j* is formed with a nipple *m* and is provided just above the latter with an air-admission valve *n*. To the nipple *m* is attached a hose-pipe *o* which forms the longer leg of the siphon *k*. With the air-admission valve *n* open, the hose-pipe *o* serves as an overflow pipe by which any overflow from the leg *j* may be led away without splashing. With the air-admission valve *n* closed, the supply of water may by opening still further the cock *r* be momentarily increased through the pipe *h* until the hose-pipe *o* is filled, whereupon the latter will act as the longer leg of a siphon of which the part *j* is the shorter leg and siphoning will commence. The boiler *a* may be thus emptied of foul water and sediment. By opening the air-admission valve *n*, the action of the siphon will be stopped. The boiler *a* is provided with a spigot *p* by which the boiler may be emptied at will, and the presence of water in the boiler may be readily determined. The lower end of the jacket *g* may be similarly provided with an ordinary drain-cock or spigot *t;* but this is a mere mechanical expedient and has nothing whatever to do with this invention. By means of curved bands or straps *v* the still may be fastened to the wall or other vertical support.

The operation of the still will now be readily understood and may be briefly described as follows: The feed-water pipe *h* is connected at one end with any suitable source of water-supply (not shown herein but it may be, for example, a common water-tap) and leads the feed-water to the still. The air-valve *n* being open, the feed-water is, at the beginning of the operation, by opening the cock *r*, allowed to flow slowly through the pipe *h* into the water-jacket *g*, in which it gradually rises and from the upper part of which it flows into the boiler *a* through the pipe *i*. The feed-water also rises in the shorter leg *j* of the siphon *k*, until its level reaches the opening in the nipple *m*, when an overflow through the hose-pipe *o* will take place. Of course, the level of the water in the boiler *a*, the water-jacket *g* and the shorter leg *j* will finally be the same and will be at the height of the

opening in the nipple *m*, as is indicated clearly in Fig. 2. The water in the boiler *a* is heated to the boiling point by the heat from the gas-burner *q* (but any other suitable source of heat may, of course, be used) and the vapor evolved rises in the pipe *c* and flows through the inclined pipe *f* into the longer leg *e* of the U-shaped condenser-tube *d*, where it is condensed, the cold water in the water-jacket *g* serving to absorb heat from the vapor and to keep down the temperature of the lower portion of the leg *e*. The condensate flows or drips from the lower end of the latter, which is open, of course. The supply of the feed-water will be regulated so as to avoid waste through the overflow-pipe *o* as far as possible and so that, therefore, the supply of feed-water will be just enough to compensate for the water which passes off from the boiler in the form of vapor. Since, however, the pressure will in practice be found to vary, some water will be lost by overflow through the pipe *o;* but the arrangement will prevent splashing and the water-level in the boiler will be kept constant automatically. When it is desired to rid the boiler *a* of foul water and sediment, the air-valve *n* is closed and the flow of water is by still further opening the cock *r* momentarily increased through the feed-water pipe *h;* and, since the horizontal section of the boiler is much greater than that of the jacket *g*, the overflow-pipe *o* and the water-jacket *g* will be filled rapidly with water. As hereinbefore explained, the boiler *a* may then be emptied by siphon action, the water flowing now from the boiler *a* and the upper part of the water-jacket *g* through the hole *s* in the wall thereof into the shorter leg *j* of the siphon and thence through the nipple *m* into the overflow pipe *o*, which constitutes the longer leg of the siphon. After the boiler *a* has been rid of foul water and sediment in this way, the air-valve *n* may be opened, the boiler filled again with a supply of feed water and the distillation resumed. Only a very short time is required for cleaning the boiler out.

I claim:

A still comprising a boiler; a condenser-tube leading therefrom; a water-jacket which is connected with said boiler close to the bottom thereof and through which passes said condenser-tube; and a siphon which is connected with said water-jacket and provided with an air-valve and which constitutes a means for maintaining the desired level of water in the still, when the air-valve is open, and a means for draining the still, when the air-valve is closed.

Signed at Masontown, Preston county, West Virginia, this 16th day of July, 1910, in the presence of the two undersigned witnesses.

RUSSELL H. McMILLEN.

Witnesses:
C. E. McMillen,
J. R. McMillen.