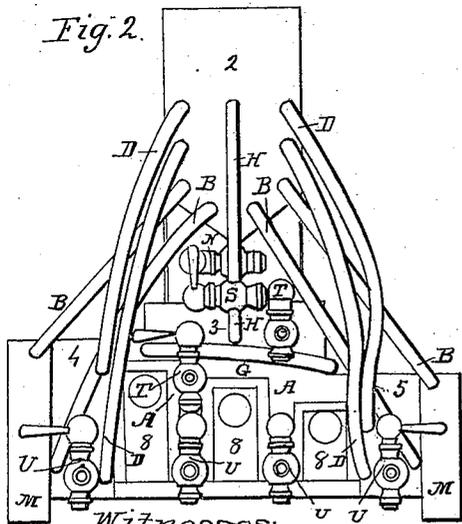
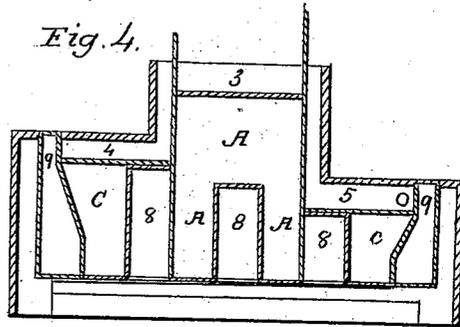
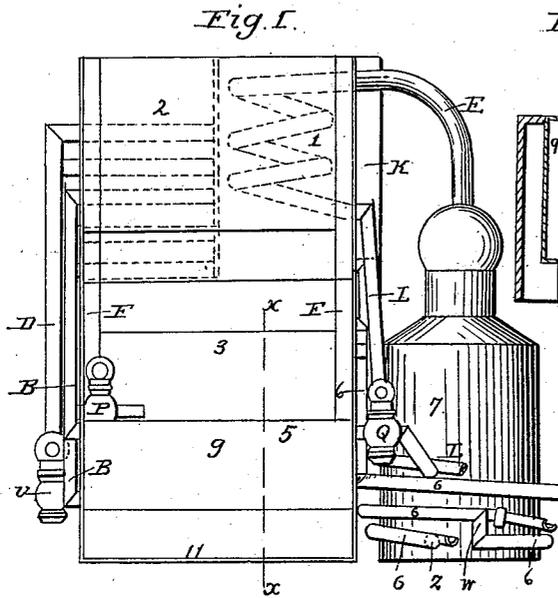


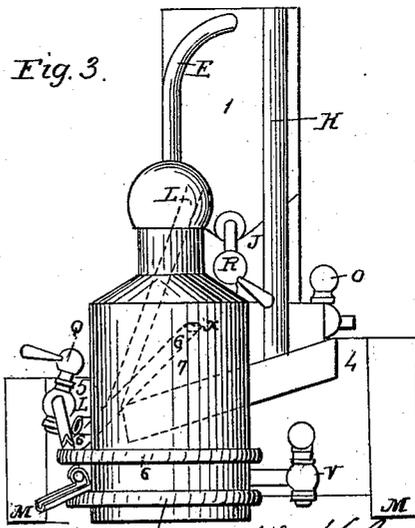
J. K. LEEDY.
Evaporating Pan.

No. 36,469.

Patented Sept. 16, 1862.



Witnesses:
C. Alexander
William Alexander



Inventor: John K. Leedy
Atty C. M. Alexander

UNITED STATES PATENT OFFICE.

JOHN K. LEEDY, OF BLOOMINGTON, ILLINOIS.

IMPROVED SUGAR-EVAPORATOR.

Specification forming part of Letters Patent No. 36,469, dated September 16, 1862.

To all whom it may concern:

Be it known that I, JOHN K. LEEDY, of Bloomington, in the county of McLean and State of Illinois, have invented certain new and useful Improvements in Sorghum-Evaporators; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference thereon marked.

In the drawings similar characters refer to like parts.

Figure 1 is a front elevation. Figs. 2 and 3 are elevations of the opposite sides. Fig. 4 is a vertical section through *x x*, Fig. 1.

To enable those skilled in the art to make and use my invention, I will describe its construction and operation.

In the drawings, 1 is the cold-water reservoir.

2 is the reservoir in which the juice of the sorghum is placed at the first stage of the operations.

3 is the steam-heater immediately over and forming the top of the steam-boilers.

4 and 5 are the first and second boiling-pans.

6 is the evaporating steam-pipe communicating at *x* with the steam-boiler and passing spirally (having, however, several "breaks" or "pitch-offs," as at *W*, Fig. 1) around the still 7, communicating with it at *z*. It will be noticed in the drawings that the pipe 6 is so constructed as to have a channel upon the upper side of that portion of it which surrounds the still, for a purpose hereinafter set forth.

7 is the still.

8 are the fire-flues.

9 are the scum-condensing pipes, which are formed by suitably bending the sheets of metal forming the boiling-pans 4 and 5.

A are the steam-boilers.

B are pipes leading from the top and bottom of scum-condensers 9 up through the sorghum-reservoir into the cold-water reservoir.

C are the scum-condensing shield-pipes, and forming each of them one side of the fire-flues.

D are pipes leading from the top and bottom of the pipes or chambers C up through the sorghum-reservoir 2 into the cold-water reservoir 1.

E is the pipe connecting the still 7 with the worm in the reservoir.

F are the supports of the reservoirs.

G is the pipe for conveying the juice from the boiling-pan 4 to the boiling-pan 5, and is regulated by a stop-cock, P.

H is a pipe leading from the water-reservoir 1 to the steam-boiler A, and is controlled by the stop-cock S.

I is a short pipe leading from the sorghum-reservoir 2 to the steam-heater 3, and is regulated by stop-cock N.

J is a short pipe for conveying water from the water-reservoir into steam-heater 3 for cleansing it, and is regulated by stop-cock R.

K is the smoke-stack.

L is a pipe in continuation of the worm, and passes its distilled contents into the channel of the steam-pipe 6.

M is the lower supporting frame-work.

O is a stop-cock on a short pipe for passing the warm juice from the steam-heater 3 to the boiling-pan 4.

Q is a stop-cock on a short pipe for drawing off the sirup from boiling-pan 5 into the channel of pipe 6.

T are the steam-boiler gage-cocks.

U are stop-cocks for drawing off the water from the boilers and condensing-chambers 9 and C when the machine is not in use.

V is the stop-cock at the bottom of the still for drawing off the dregs, &c.

W shows a step or pitch-off in the channeled steam-pipe 6, which enables me to decant the sirup at any desired point in the course of its passage around the still in the hot channel.

In the operation of my invention the water-reservoir 1 and the sorghum-reservoir 2 are properly filled. The stop-cock S is then opened and a suitable quantity of water is permitted to flow through pipe H from the water-reservoir to the steam-boiler A. The fire then being kindled, the boiler's contents are changed into steam-heating, to a good degree, the steam-heater 3, into which I now permit a suitable quantity of the sorghum-juice to flow from the sorghum-reservoir through pipe I and stop-cock N. When the juice becomes sufficiently warmed in the steam-heater 3, it is drawn off through a pipe and stop-cock, O, into the boiling-pan 4 directly over one of the fire-flues 8.

After boiling here a suitable time and after the scum has been removed, the sirup is drawn off through pipe G and stop-cock P into the lower boiling-pan, 5. When the sirup has boiled as long as desired and all the scum has been removed, it is drawn off through a pipe and stop-cock, Q, into the channel of the steam-heated pipe 6. As the sirup passes through the heated channel in its course around the still, it is further heated and evaporated by the heat of the steam in the pipe, and may be drawn off at any of the several pitch-offs at the first, last, or other, according to the amount of heating necessary after leaving the boiling-pans. By means of this channeled steam-pipe 6 I am enabled to finish the sirup without any danger of scorching. The pipes B B and D D keep the scum-condensing chambers supplied at the top with cold water from the reservoir 1, for as the water in these chambers becomes heated it will rise in the upper pipes B and D, and have its place supplied by colder water through the lower pipes B D.

I have found that by keeping the outer edges of the boiling-pans 4 and 5 cool by the means of the section-condensers, as above described, the scum from the boiling sirup is attracted over to the cold side to such a degree as to become tough and be readily removed.

The still 7, which is (in part) operated by the waste steam let into it at Z from the steam-pipe 6, is intended to distill the saccharine matter out of the scum, and operates simultaneously with the boiling and heating apparatus. The distilled spirits pass up pipe E through the worm and down out of the pipe L into the sirup in the finishing-channel of the steam-pipe 6.

Water for cleansing purposes is admitted into the steam-heater 3 through pipe J and cock R into boiling-pan 4 from the cock O, which also admits the heated sirup from the

heater 3. The same wash-water then passes through pipe G and cock P into the boiling-pan 5, whence it is discharged through cock Q into the channel of the steam-pipe 6 after cleansing which it can be thrown away.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The water-reservoir 1 and sorghum-reservoir 2, constructed and arranged substantially in the manner and for the purposes specified.

2. The construction and arrangement of the scum-condensing pipes 9 for collecting the scum at the edge of the boiling-pans 4 and 5, substantially as herein specified.

3. The construction and arrangement of the scum-condensing shield-pipes C for shielding pipes 9 from the action of the fire, substantially as herein set forth.

4. The construction and arrangement of the water or steam boilers A and fire-flues 8, operating substantially as hereinbefore set forth.

5. The channeled steam-pipe 6, (with or without the pitch-offs W,) operating substantially as herein set forth.

6. The combination and arrangement of reservoir 1, pipe J, and stop-cock R, stop-cock O, and pipe G, and stop-cock P, operating as set forth, for cleansing the steam-heater 3 and boiling-pans 4 and 5, and pipe 6.

7. The combination of the still 7 with the pipe 6, when operating substantially in the manner and for the purposes hereinbefore set forth.

In witness that I claim the foregoing I have hereunto set my hand in the presence of witnesses.

JOHN K. LEEDY.

Witnesses:

D. H. BROWN,
WILLIAM STITT.