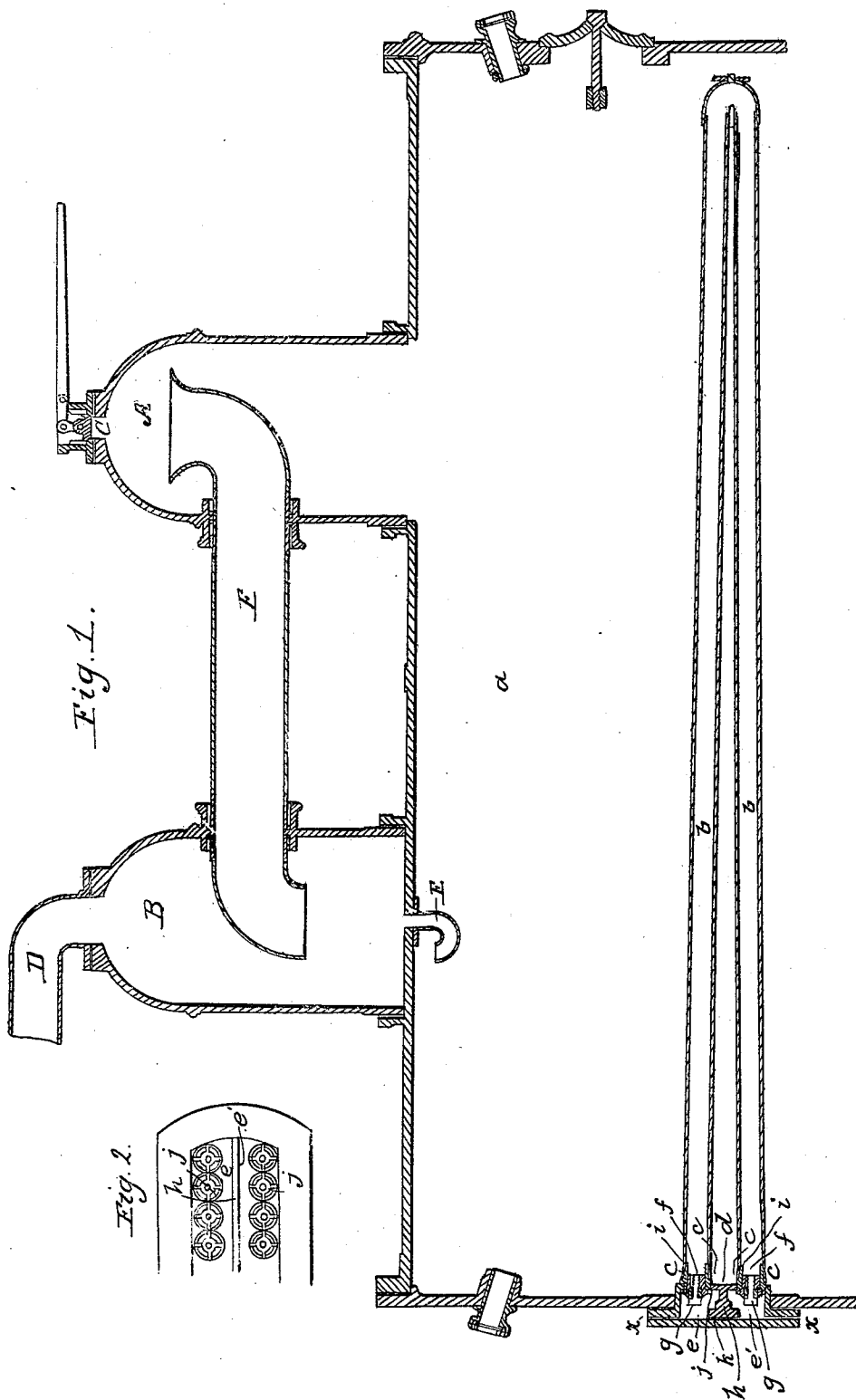


A. STILLMAN.
Evaporating Pan.

No. 6,671.

Patented Aug. 28, 1849.



UNITED STATES PATENT OFFICE.

ALFRED STILLMAN, OF NEW YORK, N. Y.

IMPROVEMENT IN SUGAR-PANS.

Specification forming part of Letters Patent No. 6,671, dated August 28, 1849.

To all whom it may concern:

Be it known that I, ALFRED STILLMAN, of the city, county, and State of New York, have invented a new and useful improvement in the vacuum-pan for evaporating saccharine juices, but applicable to the evaporation of other liquids; and I do hereby declare that the following is a full, clear, and exact description of the principle or character which distinguishes it from all other things before known, and of the manner of making, constructing, and using the same, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a longitudinal vertical section of my improved pan, and Fig. 2 a cross vertical section taken at the line X X of Fig. 1.

The same letters indicate like parts in all the figures.

In the vacuum-pan heretofore invented by me the vapor is carried off from the pan and passes up into one dome, and is then conducted off to the exhaust-pipe at the top of another dome by a pipe within the pan, one end of which is turned up and extended vertically into the first dome, and the other turned up and carried into the dome of the exhaust-pipe, and there turned down again for the downward discharge of the vapor, so that should the pan "prime"—that is, the liquid foam—the liquid particles carried up by the current of vapor will fall to the bottom of the dome and run back into the pan through a small bent pipe in the bottom of the dome or top of the pan, while the vapor will pass up and out through the exhaust-pipe at the top.

Although this invention has been and is useful, yet in practice I have found it to be defective in one particular. The liquid particles carried up into the conducting-pipe by foaming remain in the lower part thereof, the current of vapor not being sufficiently strong to carry them up the end of the pipe into the dome of the exhaust-pipe, and, being retained there, the action of the heat will continue the evaporation until crystallization takes place, and this process being continued, the pipe soon fills up, requiring the apparatus to be taken to pieces for the purpose of clearing the pipe.

The object of the present improvement is to avoid this inconvenience, which, to the sugar-planter in particular, is a very serious evil.

The nature of my invention consists in con-

necting the two domes of the pan by means of a pipe above the top of the pan, with the end in the first dome turned up to prevent in part the foam from the liquid to pass up into the pipe, and turned down in the second dome for the free discharge of the liquid particles which may be carried over by the vapor.

In the accompanying drawings, *a* represents a sugar-pan of a cylindrical form, and horizontal, but which may be made of any other desired form, and *b* the steam-pipes placed near the bottom for applying heat to the saccharine juice or other liquid to be evaporated. The upper ends of these pipes are secured to the head of the pan, run at a slight inclination downward to within a short distance of the other end, are there crooked, and then run back at the same inclination downward to the first end, where they are secured to the same head and below the attachment of the first-named ends. The ends of these pipes are provided with collars *c*, that fit accurately in holes in the inner plate, *d*, of a steam-chamber, *e e'*, and the insides of these collars are made with arms *i*, that sustain central nuts, *f*, and the plate *d* is provided with open bridges *j*, corresponding with the nuts and arms at the end of the pipes, so that by means of screws *g*, passing through the center of the bridges and tapped in the nuts, the pipes can be secured and held tight in their places, and can be removed with facility for repairing or cleaning. The steam-chamber is divided into two compartments, *e* and *e'*, by a horizontal partition, *h*, the one, *e*, communicating with the upper end of the pipes for the admission of steam, and the other, *e'*, with their lower ends for the escape of the steam, and then the compartments are inclosed by a cap-plate, *k*. The two compartments are to be provided with the usual induction and eduction pipes, which, being well understood, need no description or representation. The steam entering the upper end of the steam-pipes passes down inclined planes until it escapes from the lower end, so that any liquid that may be produced in the pipes by condensation or otherwise introduced will discharge itself.

At the top of the pan there are two domes, A and B, the one, A, with the usual air-valve, C, at top, and with the bottom entirely open for the passage of vapors from the saccharine juice or other liquid under treatment in the

pan, and the other, B, with the exhaust-pipe D at top, and with the bottom closed, but provided with a short pipe, E, which passes down into the pan, and is there turned up, to prevent as much as possible the escape of vapor from the pan directly into this second dome, and yet permit any liquid to pass down from this second dome into the pan. The two domes are connected together above the top of the pan by a pipe, F, slightly inclined downward from the first to the second. Within the first dome, A, the pipe F is turned up and extends nearly to the top, so that the vapor must rise near to the top of the dome to enter the pipe, to prevent as much as possible the foam from entering the pipe; and in the second dome, B, it is turned downward, so that any liquid particles that may pass over with the vapor or be there produced by condensation may run down the inclined pipe and be discharged downward onto the bottom of the dome and pass back into the pan through the small bent pipe E, while the vapor passes around the end of the

pipe and escapes through the exhaust-pipe. In this way it will be obvious that liquid particles cannot remain in the pipe F, for they will run down the inclined surface of the pipe into the second dome, and even if the pipe should be made horizontal they will be carried through and discharged by the current of vapor.

What I claim as my invention, and desire to secure by Letters Patent, is—

Connecting the two domes of the evaporating-pan by means of a pipe above the top of the pan, the end of which in the second dome is turned down, substantially in the manner and for the purpose described, whether the said pipe be inclined downward from the first to the second dome, or be horizontal, as described.

ALFRED STILLMAN.

Witnesses:

CHAS. M. KELLER,
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