

(No Model.)

M. DAY, Jr.
EVAPORATOR.

No. 268,199.

Patented Nov. 28, 1882.

Fig. 1.

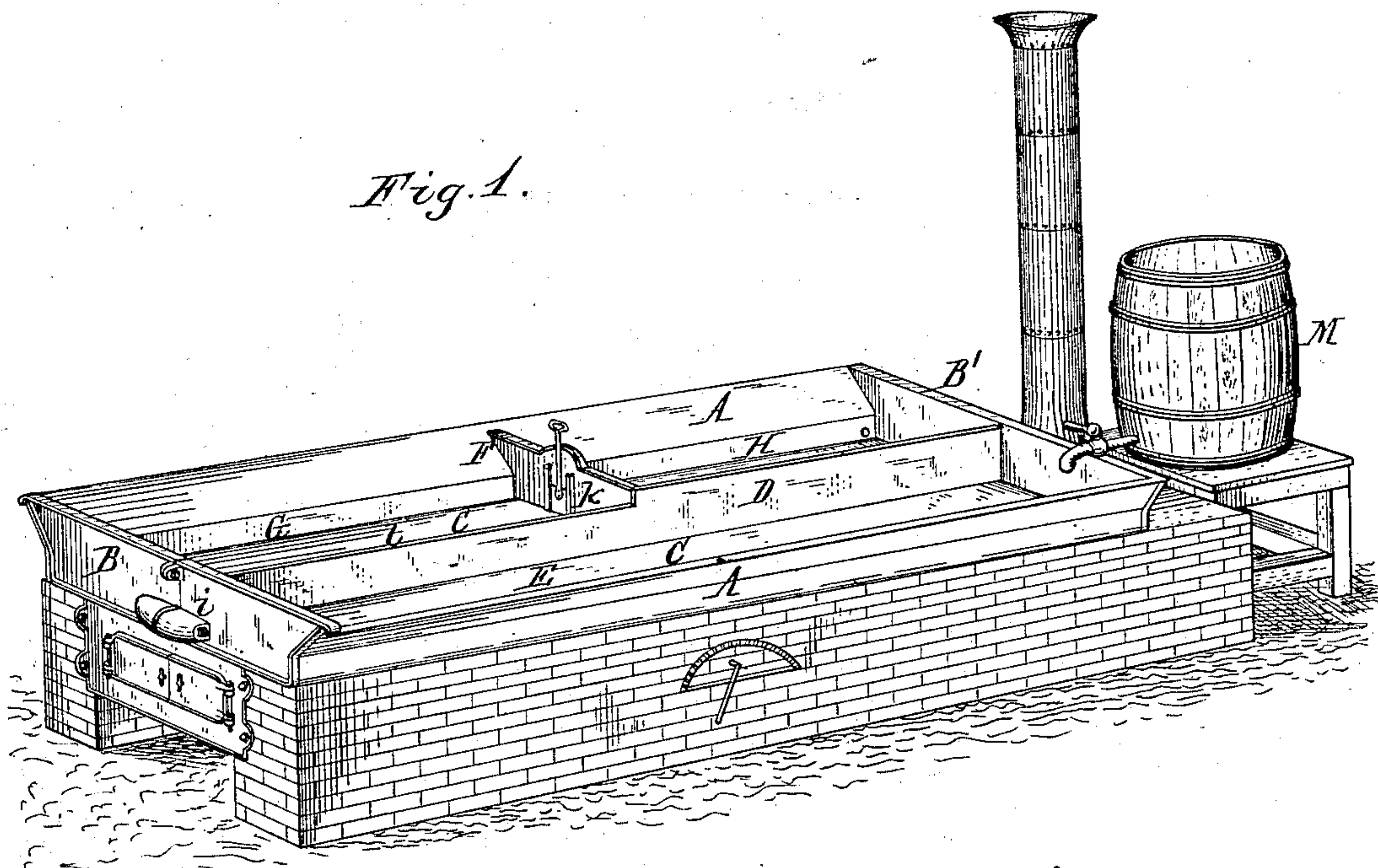
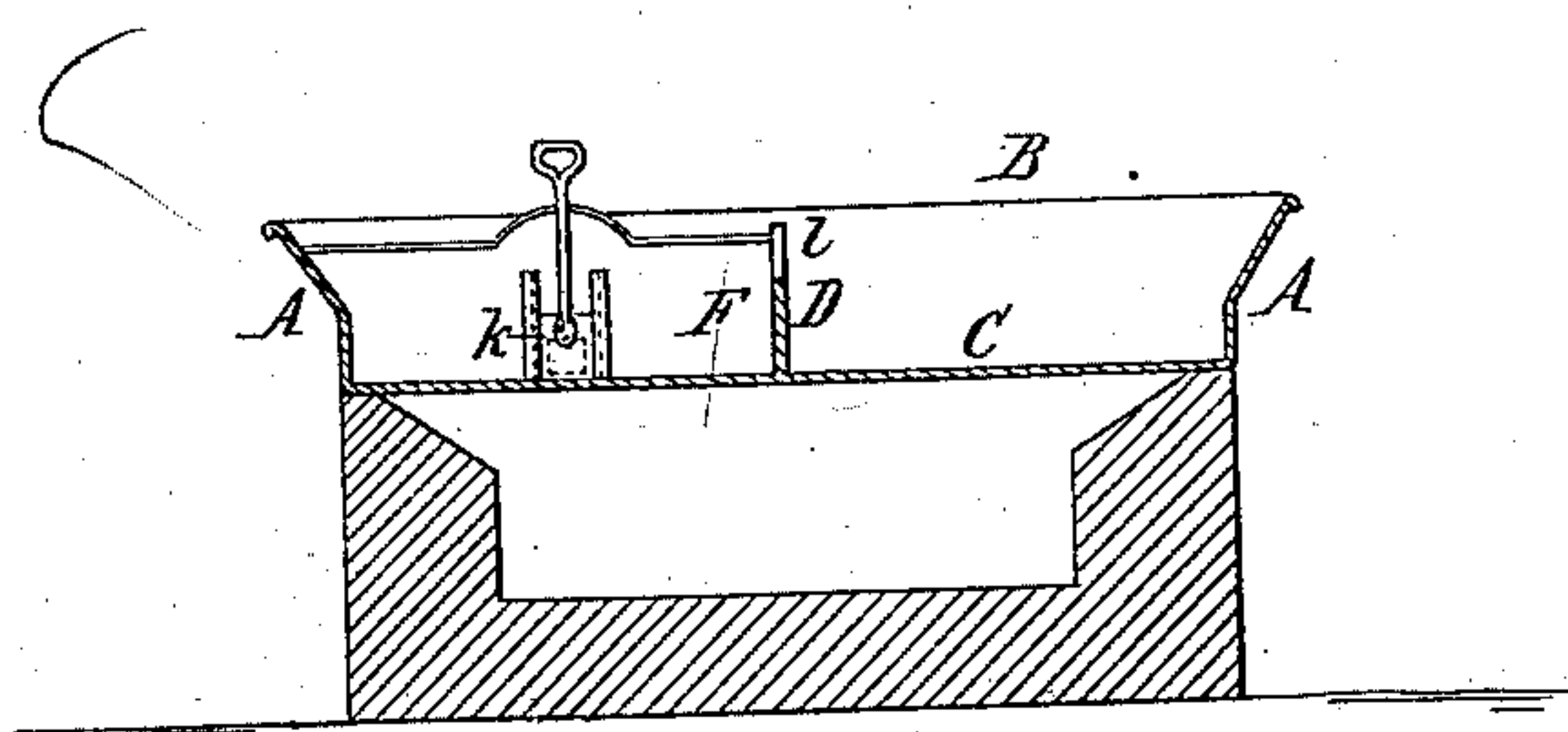


Fig. 2.



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UNITED STATES PATENT OFFICE.

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EVAPORATOR.

SPECIFICATION forming part of Letters Patent No. 268,199, dated November 28, 1882.

Application filed September 29, 1882. (No model.)

To all whom it may concern:

Be it known that I, MATTHIAS DAY, Jr., of Oberlin, in the county of Lorain and State of Ohio, have invented new and useful Improvements in Evaporators, of which the following is a specification.

This invention has for its object to so construct an evaporator for cane-juice and other like liquids that the scum and other light impurities which rise to the surface of the boiling liquid are conducted to one part of the evaporator by the circulation of the liquid through the evaporator, thereby enabling the attendant to remove the accumulated scum from time to time with very little labor.

In the accompanying drawings, Figure 1 is a perspective view of an evaporator provided with my improvement. Fig. 2 is a cross-section of the evaporator.

Like letters of reference refer to like parts in both figures.

A A represent the sides, B B' the ends, and C the bottom, of the evaporator. D is a longitudinal partition connecting the ends B B' and forming on one side an evaporating-compartment, E, extending over the entire length of the evaporator, while the opposite side of the evaporator is subdivided by a transverse partition, F, into two compartments, G and H. The compartment G communicates with the compartment E by a bent pipe, *i*, located at the front side of the evaporator, immediately above the bottom C, or by an opening formed in the partition D, at or near its end. The compartment H is separated from the compartment E by the partition D, and communicates with the compartment G by an opening in the partition F, which is opened and closed by a suitable gate or valve, *k*, so that when the liquid has been evaporated to a certain density in the compartment G it can be drawn into the compartment H, where it is finished. That portion of the partition D which separates the compartment G from the compartment E is made lower than the level to which the scum rises in the compartment G, as represented at *l*.

The raw juice is introduced into the com-

partment E from a barrel or other receptacle, M, and enters the compartment G through the pipe *i* or the opening formed in the partition D. The supply of juice is so regulated that its level remains below the top of the low portion, *l*, of the partition D, the loss in bulk by evaporation being compensated for by the raw juice flowing into the compartment E from the receptacle M. The juice in the compartment G is denser than the juice in the compartment E, and the steam escapes therefore from the juice in the compartment G with greater difficulty and lifts the juice higher than in the compartment E. The scum and foam flow from the compartment G over the partition *l* into the compartment E, and pass toward the point at which the juice enters the compartment E, the level of the juice being lowest at this point, at which the juice is coldest and last agitated. A double current is thus established in the evaporator—one along the bottom of the same from the point at which the juice enters the compartment E to the opposite end thereof and through the pipe *i* into the compartment G and to the partition F, and a return-current on the surface over the low portion, *l*, of the partition D into the compartment E and back in the latter to the place of beginning. This return surface-current carries with it all floating impurities and deposits the same at the juice-entrance, whence they may be removed by a skimmer or raked over an inclined beach into a gutter. When the juice in the compartment G has been evaporated to the desired density it is drawn into the compartment H, and finished therein in the usual manner. The partition D may be reduced in height, as shown at *l*, over the entire portion which separates the compartment G from the compartment E or for a greater or less part of said portion, as may be preferred.

I claim as my invention—

1. An evaporator having a longitudinal partition, D, provided with a portion, *l*, of reduced height, over which the scum and other light floating impurities are discharged from one compartment into another, substantially as set forth.

2. An evaporator provided with a compartment, E, receiving the raw juice, a finishing-compartment, H, an intermediate compartment, G, through which the juice passes on
5 its way from the receiving-compartment E to the finishing-compartment H, and a partition, D, reduced in height wholly or in part be-

tween the compartments G and E below the level of the scum in the compartment G, substantially as set forth.

MATTHIAS DAY, JR.

Witnesses:

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