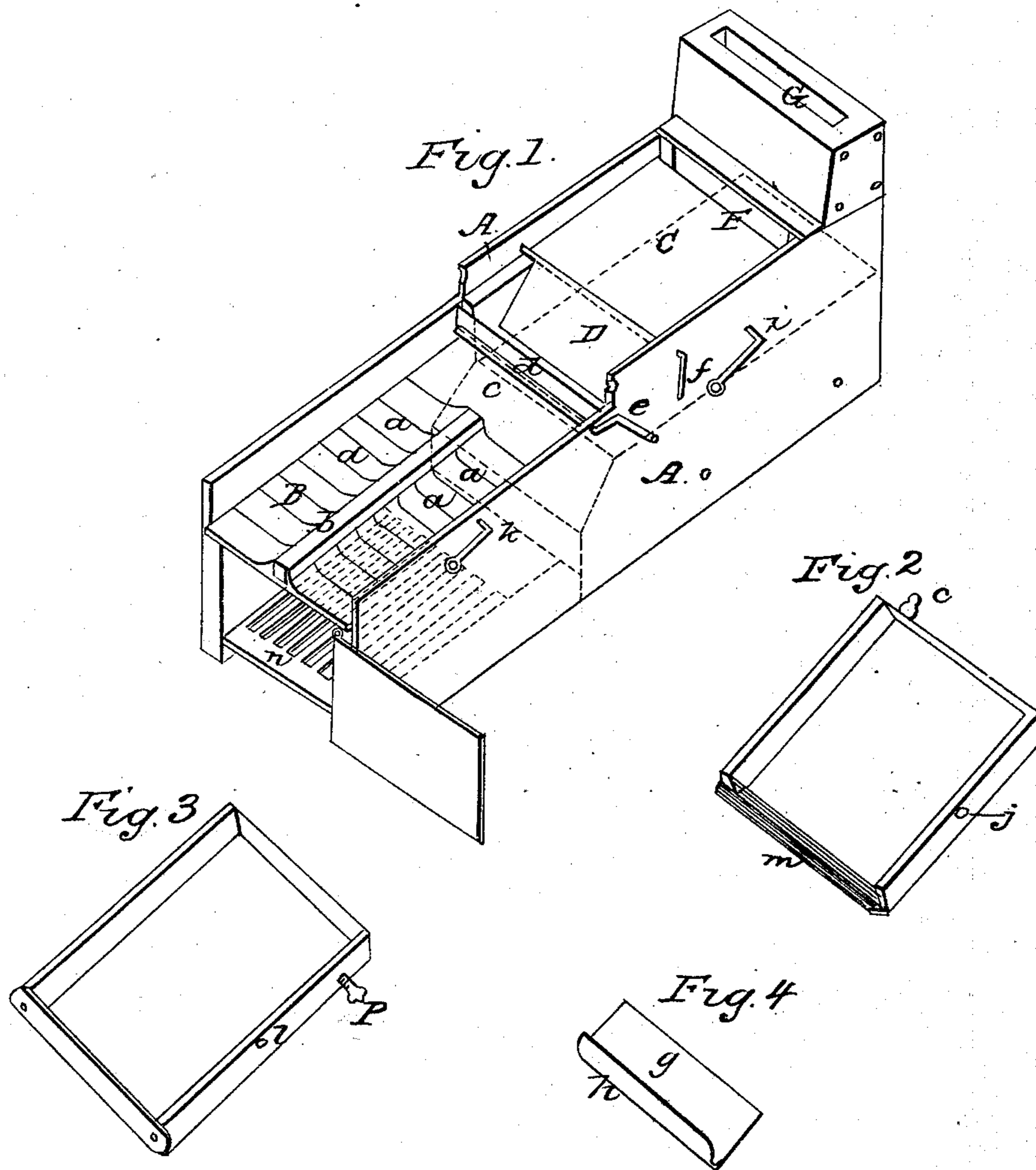


S. M. SHATTUCK.

Sugar Evaporator.

No. 62,292.

Patented Feb. 19, 1867.



Witnesses  
Chas. Hermon  
W. H. Ammann

By  
S. M. Shattuck  
E. L. Jones & Co.  
Attys.

# United States Patent Office.

SHUBEL M. SHATTUCK, OF CAMBRIDGE, ILLINOIS.

*Letters Patent No. 62,292, dated February 19, 1867.*

## IMPROVED SUGAR EVAPORATOR.

*The Schedule referred to in these Letters Patent and making part of the same.*

### TO ALL WHOM IT MAY CONCERN:

Be it known that I, SHUBEL M. SHATTUCK, of Cambridge, in the county of Henry, and State of Illinois, have invented a new and improved Sugar Evaporator; and I hereby certify that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is a perspective view, with the evaporating pans removed.

Figures 2 and 3 are views of the evaporating pans.

Figure 4 is a view of a plate which supports the rear end of the front pan.

My invention consists in heating the pan in which the evaporating process is completed, by radiated heat from a peculiarly constructed radiator, and in heating the pan in which the skimming process is performed, either by radiated heat or by having the fire come in direct contact with the bottom of the pan. It also consists in providing a means by which the boiling of the juice or sirup may be stopped or regulated, by admitting a current of cool air under the pans, and without reducing the fire. To accomplish the object of my invention, I construct a furnace over which the evaporating pans are placed, the furnace being so constructed that the front pan will be somewhat lower than the rear one.

The walls A A of the furnace may be of cast iron, brick, or other suitable material, but for portable evaporators it is necessary that all parts of the furnace should be of metal, and connected together in such a manner that it may be removed from place to place without being taken apart. The radiator B, which is placed under the finishing pan, (a space being left between it and the pan,) consists of the cast-iron pieces *a a a a*, which extend across the furnace from side to side, their ends resting on supports constructed on the inside of the side walls. The pieces constituting the radiating plate B are constructed thicker or deeper at the centre than at the ends, and at the centre on their upper side a bevelled groove is formed transversely across them, through which the dove-tailed key *b* is passed, securing the pieces together and forming the radiator. The plate thus constructed extends back nearly the entire length of the front or finishing pan, where it connects with the plate C, which extends to the rear end of the pan. The advantages in constructing the radiator B in sections, as represented, are that it will not be so liable to warp or spring by being heated, as if it were constructed of one solid plate, for each piece or section can expand in length independently of the others, and the manner of attaching them to the key *b* will allow them to expand laterally, each independently of the others. Another advantage is that if one section should become warped by the action of the heat it can be easily replaced by a new one, and with much less expense than the whole radiator could be replaced, which would be necessary if it were in one solid piece. At the rear side of the plate C is placed the damper *d*, which corresponds in size and shape with the internal size and shape of the space between the plate C and the bottom of the finishing pan. One end of the rod to which the damper is attached extends through the side wall and is bent at right angles, as shown at *e*, by which means the damper is operated. The plate C is placed under the upper or skimming pan, a space being left between it and the bottom of the pan. This plate extends from the rear end of the pan to near the front end, and may be constructed in one piece, as it will not be so liable to warp as the radiator B as it will not be so intensely heated. At the front end of the plate C is placed a damper D, which extends forward to the damper *d*, and may be turned obliquely downward or raised so as to be on a line with the plate C, and is for a purpose to be hereafter described. The end of the rod *f*, to which the damper D is attached, and by which it is operated, extends through the side wall and is bent at right angles. The part *g* of the metallic plate, fig. 4, is placed under the rear end of the lower or finishing pan, fig. 3, and the part *h*, which is turned at right angles, extends up to the front end of the skimming pan. The skimming pan, fig. 2, is placed on the elevated part of the furnace, so that the bottom of it will be on a level with or above the top of the finishing pan, and it is held firmly in place by the hooks *i*, attached to the side walls and which hook over the pins *j* in the side of the pan. The finishing pan, fig. 3, is placed on the front part of the furnace over the radiator B and plate C, and is held in place by the hooks *k*, which hook over the pins *l* in the sides of the pan. The pans may be constructed with the bottoms of sheet metal and sides of wood, or they may be made entirely of sheet metal. To the rear end of the skimming pan, on the outside thereof, is attached a trough, *m*, which extends the entire width of the pan, and into which are thrown the skimmings, which may then be carried away by a spout.

The operation of my evaporator is as follows: The pans being placed in their proper position on the furnace, and the damper *d* turned up, a fire is made on the grate *n*, which heats the radiator *B* by coming in direct contact with it, and the radiated heat from the radiator is sufficient to boil the juice in the finishing pan but will not burn it. The damper *D* may be turned down, which will allow the fire to come in direct contact with the bottom of the skimming pan, the draught being through the opening *F* into the flue *G*, or the damper may be turned up in a horizontal position on a line with the plate *C*, when the fire will pass under the plate and into the flue, and the pan will be heated by radiated heat from the plate *C*. The boiling in the lower or finishing pan may be almost instantly stopped without reducing the fire or interfering with the boiling in the skimming pan, by turning down the damper *d*, which will admit a current of cool air to pass under the pan through the space between it and the radiator *B*, and the boiling in the skimming pan may be checked without interfering with the boiling of the finishing pan by turning up the damper *D*. Or the boiling in both pans may be stopped at the same time by turning up the damper *D* and turning down the damper *d*, which will admit a current of cold air to pass under both pans for their entire length. This arrangement of the dampers affords a convenient means by which the juice or sirup in the pans may be prevented from burning, or foaming, or boiling over, without reducing the fire, and also by this arrangement the pans may be emptied and cleansed without reducing the fire, or one of the pans may be emptied and cleansed without interfering with the boiling of the other, all of which is very convenient where custom work is being done. The juice is first placed in the upper or skimming pan, where it is heated and all the impurities removed by a skimmer of the entire width of the pan, the skimming being commenced at the front end of the pan, and ending at the rear end, and the skimmer emptied into the trough *m*. When all impurities are removed from the juice it is drawn through the faucet *o* into the finishing pan, where it is evaporated to the proper consistency and drawn off through the faucet *p* into coolers.

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

1. The radiator *B*, constructed substantially as described and for the purpose set forth.
2. The dampers *D* and *d*, substantially as and for the purpose set forth.
3. The plate *C*, in combination with the dampers *D* and *d*, and radiator *B*, substantially as described.

SHUBEL M. SHATTUCK.

Witnesses:

O. E. PAGE,  
A. R. MOCK.