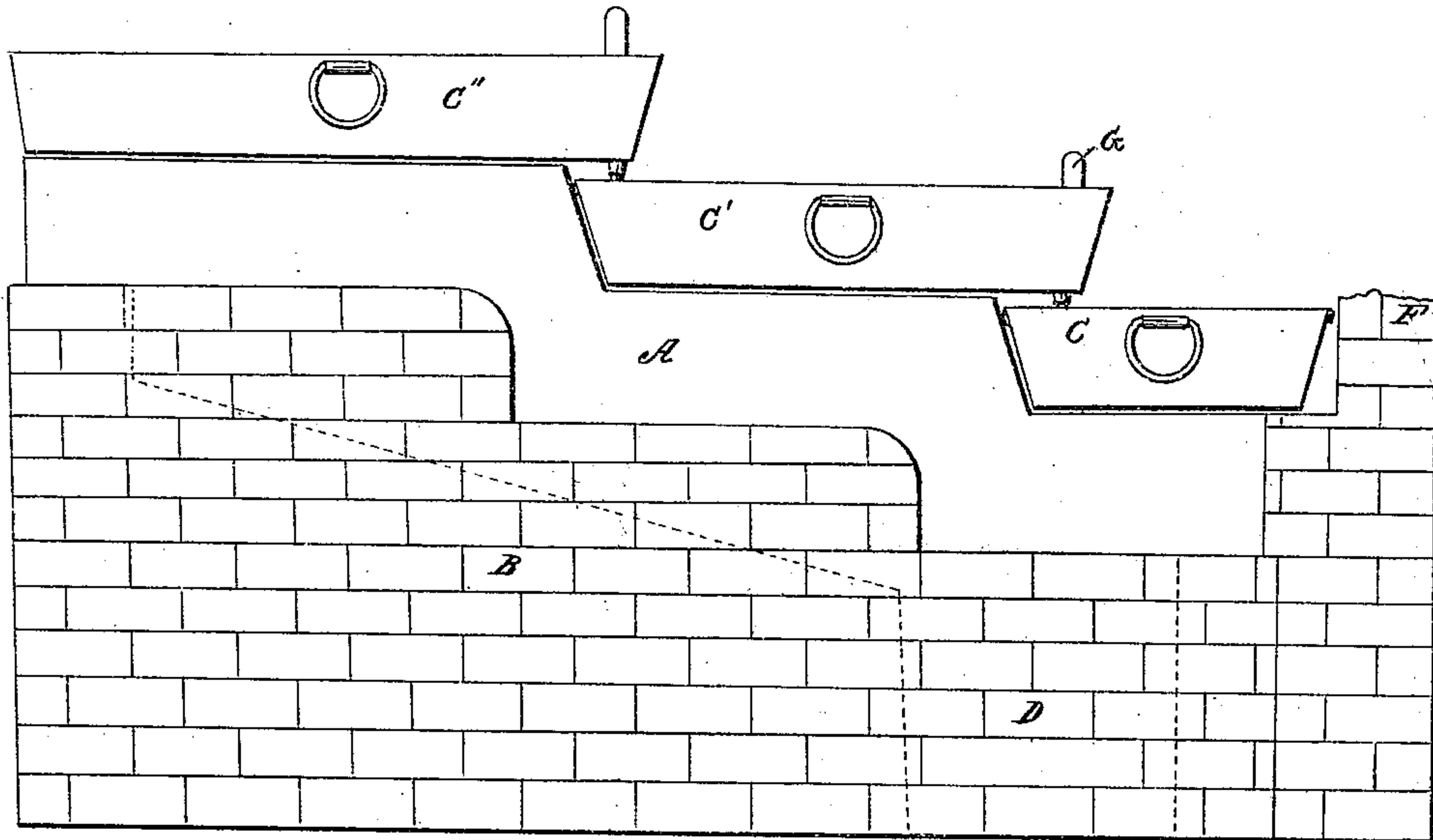


S. B. SPAULDING.  
Sugar Evaporating Furnace.

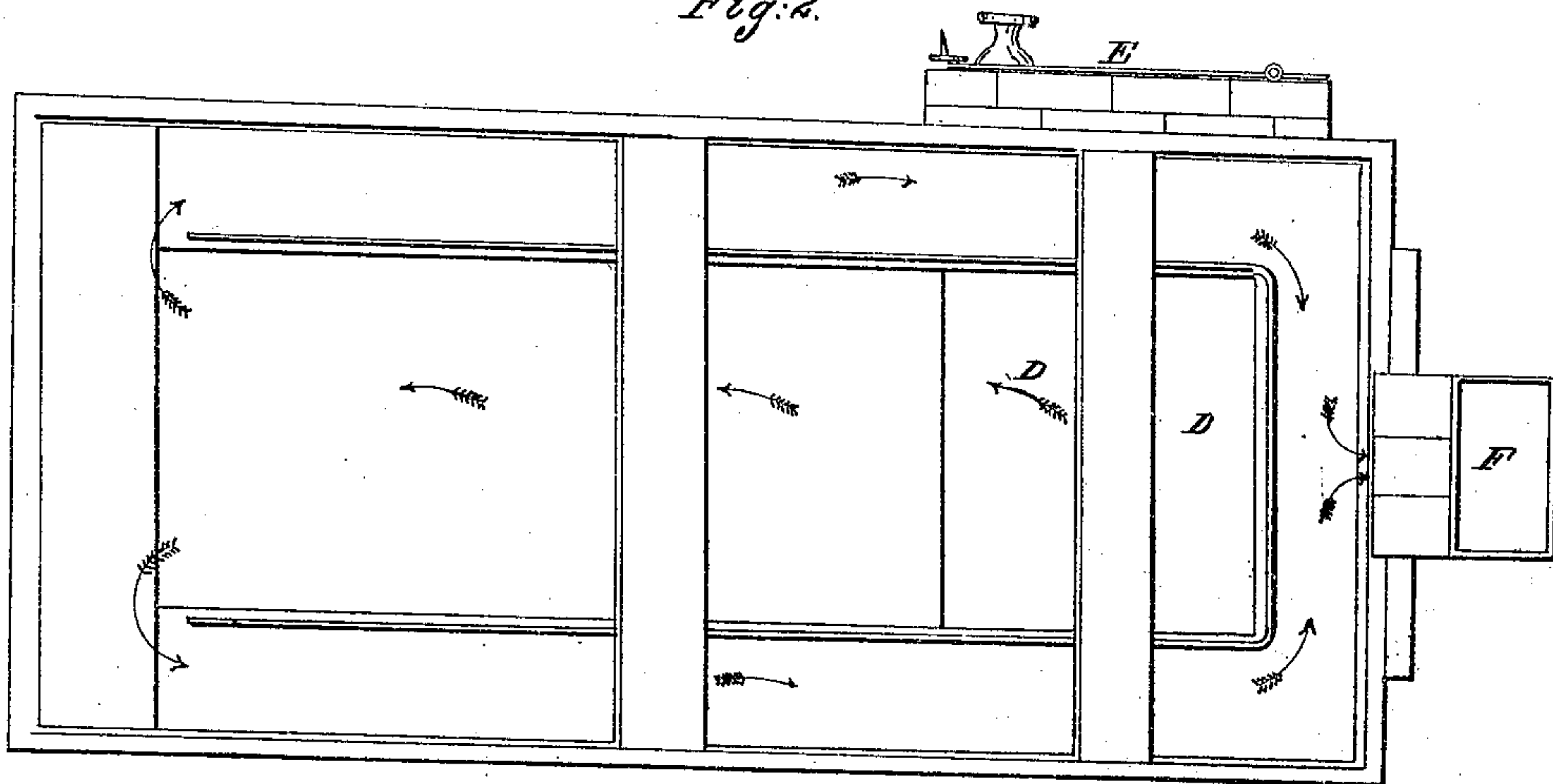
No. 40,196.

Patented Oct. 6, 1863.

*Fig. 1.*



*Fig. 2.*



*Witnesses:*

*G. Breed.*  
*A. Brown.*

*Inventor:*

*Samuel B. Spaulding*  
*by Daniel Breed Atty.*

# UNITED STATES PATENT OFFICE.

SAMUEL B. SPAULDING, OF BRANDON, VERMONT.

## IMPROVEMENT IN FURNACES FOR SUGAR-EVAPORATORS.

Specification forming part of Letters Patent No. 40,196, dated October 6, 1863.

*To all whom it may concern:*

Be it known that I, SAMUEL B. SPAULDING, of Brandon, in the county of Rutland and State of Vermont, have invented a new and useful Improvement in Furnaces for Boiling Sap and other Liquids; 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 marked thereon.

My invention consists of a peculiar iron frame, in combination with brick-work and pans, the whole forming an improved furnace and boiler combined for boiling sap, sorghum, and other cane-juice.

In the accompanying drawings, Figure 1 is a side elevation of my furnace with the evaporating-pans in place. Fig. 2 is a top view of the furnace, the pans being removed to show the arrangement of the flues.

In the construction of my furnace the frame A may be best made of cast-iron, while the main portion of the furnace is brick-work. This iron frame crowns the masonry of the furnace, giving to it finish and durability, and forming three flues—one main wide central flue and two narrow side flues—as seen in Fig. 2. This frame has three levels of different height for receiving the evaporating-pans C C' C'', Fig. 1. The fire-pit D and chimney F are both at the same end of the furnace, in order that the flame and smoke may pass through a longer circuit and thus all the heat be utilized, the fuel being introduced through the door E. The outline of the fire-pit and the bottom of the main flue are indicated by red dotted lines, Fig. 1. The bottom of the side or return flues corresponds to the top of the brick-work. The pans C C' C'', when in

place, entirely cover these flues, and being filled with sap or cane-juice, the ascending flame acts most forcibly upon the pans C' C''. C'' having a larger bottom surface exposed to the heat, the evaporation is most rapid therefrom, and as its contents become concentrated the plug G' is withdrawn, emptying the sirup into the pan C', while new sap is substituted in C''. In like manner as the sirup in C' is further concentrated it is allowed, by the withdrawal of the plug G, to flow into pan C, where the process of evaporation is slowly finished.

It will be observed that the pan C'' projects over C', and C' over C, for the purpose of more readily passing the contents of the upper pans to the lower through the orifices closed by the plugs.

By this simple and cheap construction of furnace all the most desirable objects aimed at in more complicated, and consequently expensive, furnaces for sap or cane-juice evaporation are attained. The evaporation is rapid, can be conducted with very little manual labor, the sap can be easily changed from exposure to high heat to that less violent as the evaporation progresses, while new supplies of sap are introduced without removal of the pans.

Having thus fully described my improvement, what I claim, and desire to secure by Letters Patent of the United States, is—

The above-described iron frame, in combination with the brick-work and evaporating-pans, substantially as set forth.

In witness whereof I hereunto set my hand.

S. B. SPAULDING.

Witnesses:

A. A. NICHOLSON,  
H. E. LEONARD.