

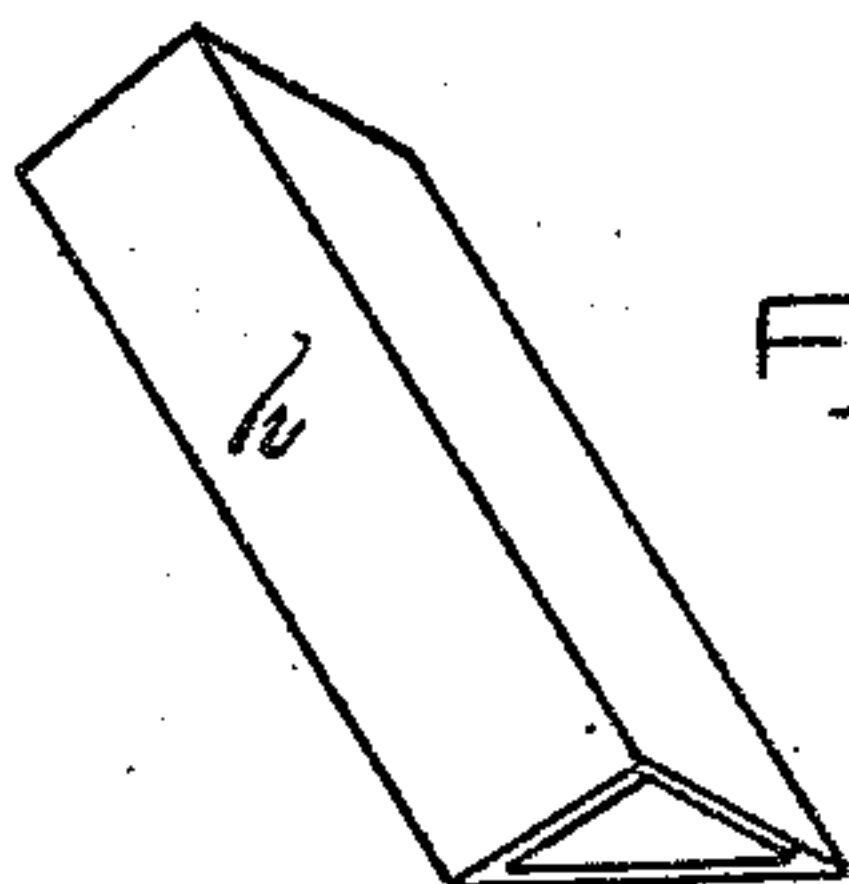
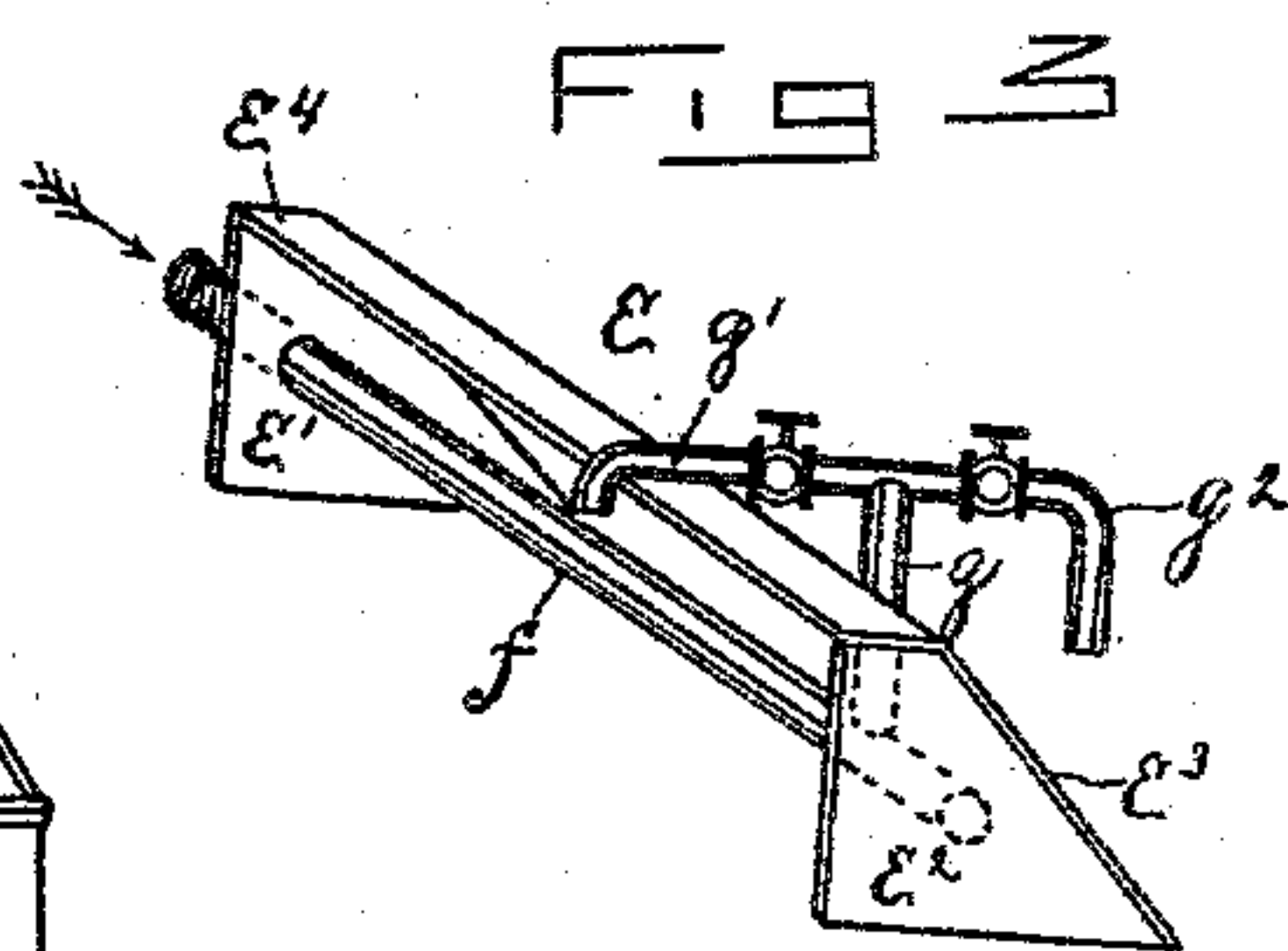
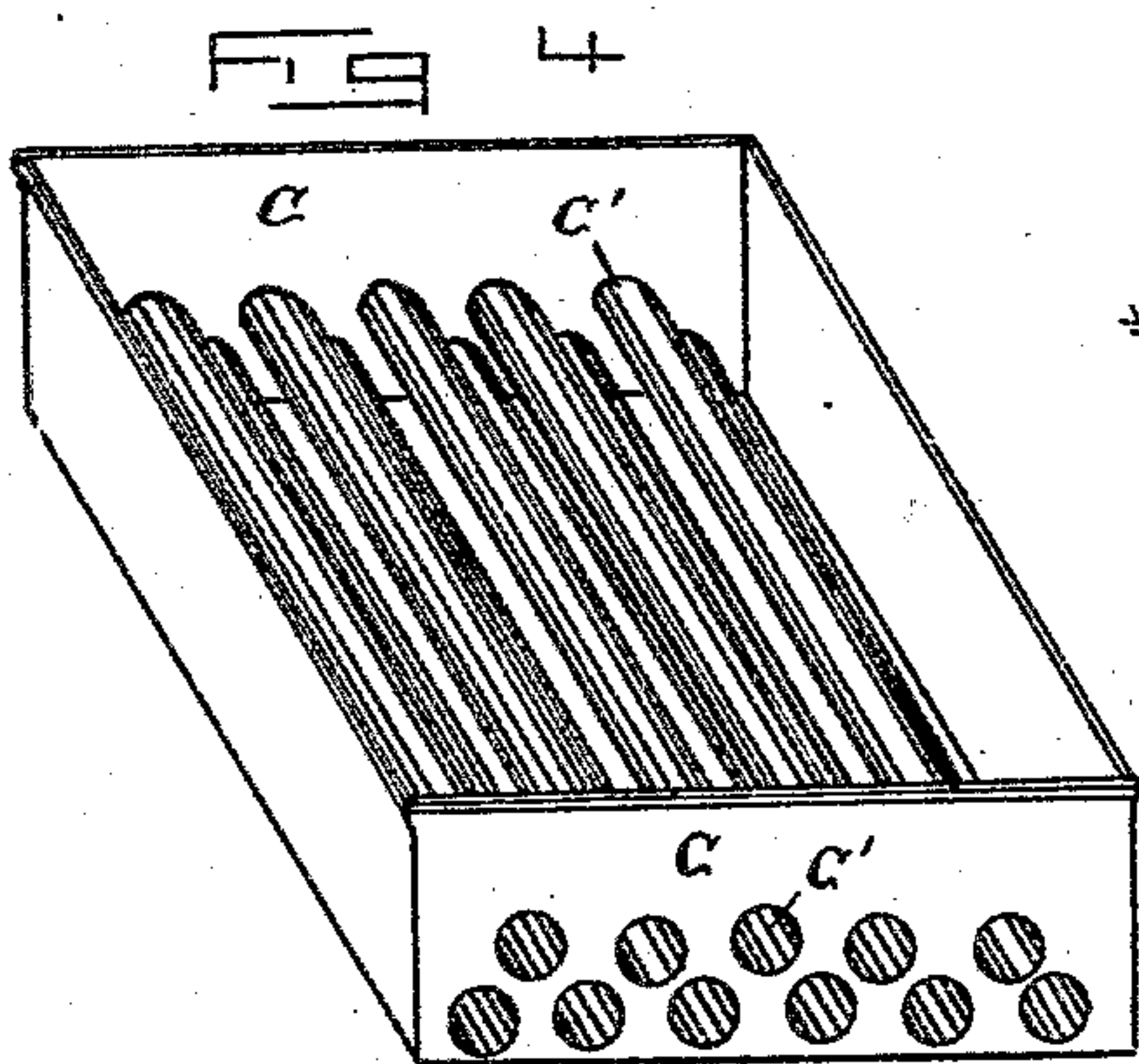
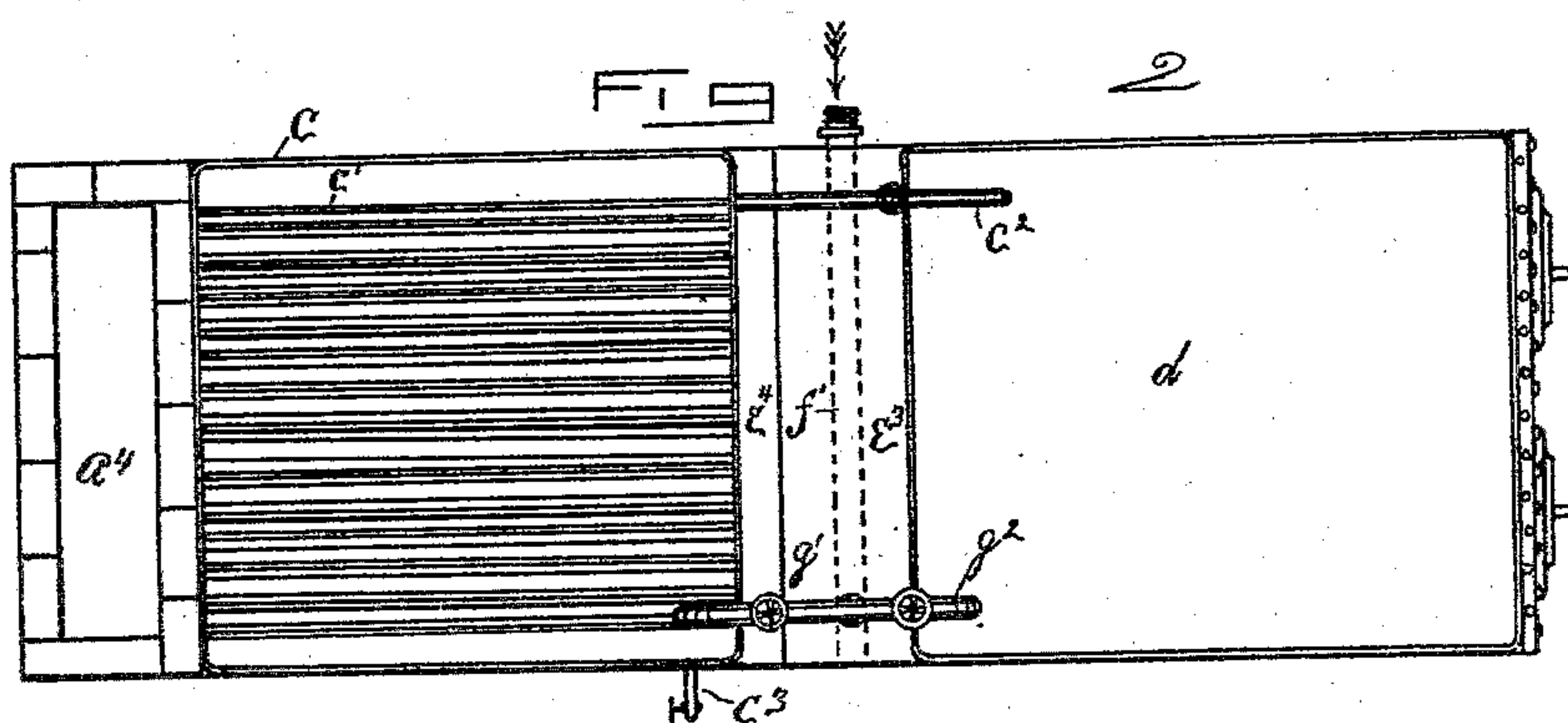
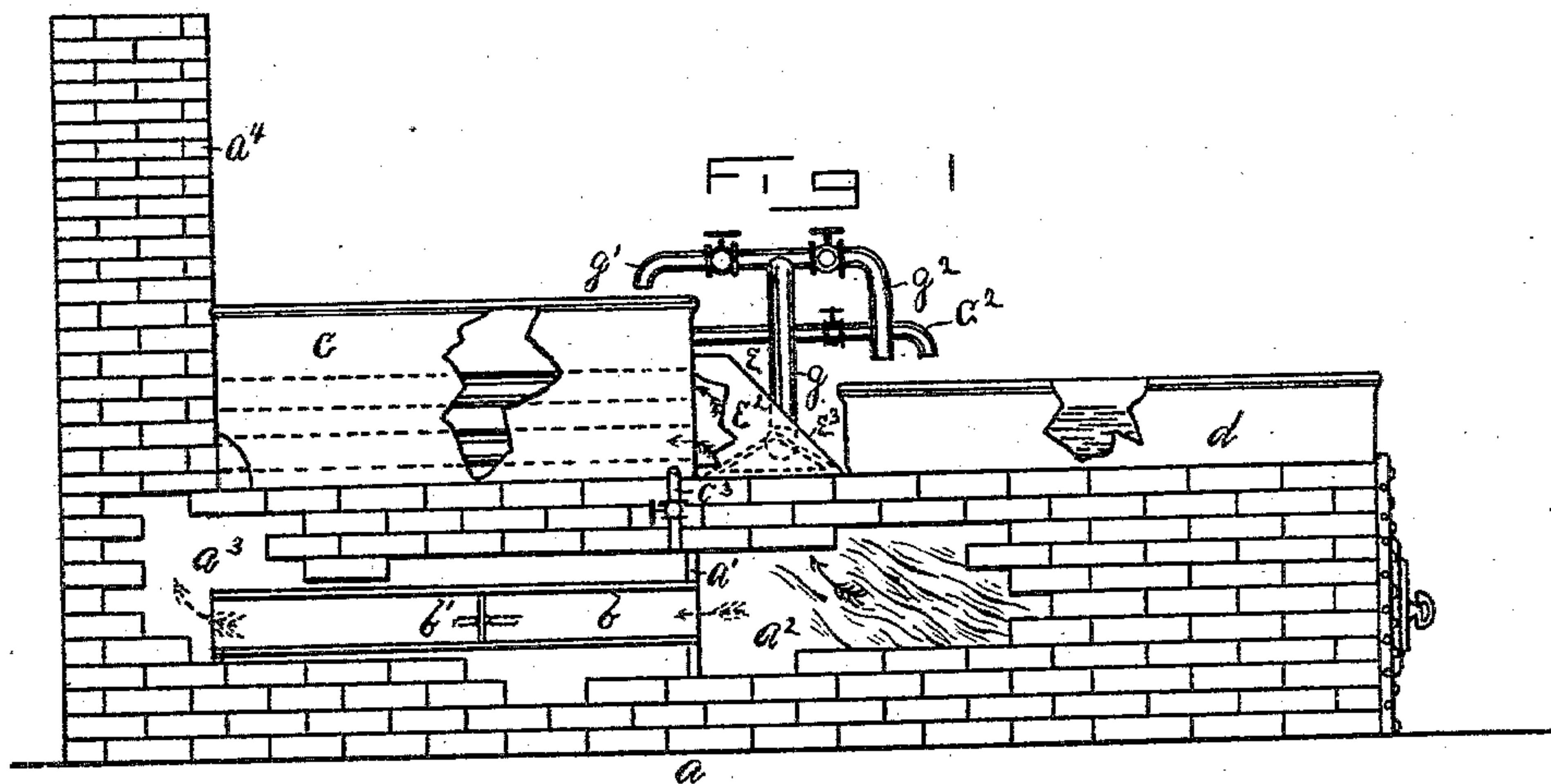
(No Model.)

E. SLAGHT.

EVAPORATOR.

No. 286,646.

Patented Oct. 16, 1883.



Witnesses:

*Wm. H. Laddick*  
*J. H. Martin*

Inventor  
*Edwin Slaght*  
By *W. F. Miller*  
*Atty*



# UNITED STATES PATENT OFFICE.

EDWIN SLAGHT, OF GOWANDA, NEW YORK.

## EVAPORATOR.

SPECIFICATION forming part of Letters Patent No. 286,646, dated October 16, 1883.

Application filed April 6, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, EDWIN SLAGHT, a citizen of the United States, residing at Gowanda, in the county of Cattaraugus and State of New York, have invented certain new and useful Improvements in Maple-Sap Evaporators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

My invention relates to certain improvements in that class of evaporators in which maple-sap is reduced by the action of heat to a proper consistency for the production of sirup or sugar; and it consists in a certain combination and arrangement of devices by means of which the sap to be converted is heated before it is introduced into the evaporating-pan in which it is first operated upon.

My invention further consists in a removable deflector, arranged upon the top of a sectioned furnace, in conjunction with one or more evaporating-pans, by means of which deflector the heat generated in one section of the furnace can be passed through or in contact with the evaporating-pan in which the sap is first operated upon, such evaporating-pan being relieved of the deflected heat at the proper time by the removal of such deflector.

My invention further consists of certain other details of construction, all of which will be more fully hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of my improved sap-evaporator, with portions broken away to show the interior construction. Fig. 2 is a top plan view of Fig. 1. Fig. 3 is a perspective view of the deflector. Fig. 4 is a like view of an evaporating-pan, and Fig. 5 is a detail view.

Referring to the drawings,  $a$  is the furnace, divided by the arch  $a'$  into the two sections  $a^2$  and  $a^3$ , while  $a^4$  represents the chimney. Through an opening in the arch  $a'$  is inserted the flue  $b$ , which extends back to the flue of the chimney  $a^4$ , and is provided with the valve  $b'$ .

$c$  is the main evaporating-pan, which is preferably provided with the series of flues  $c'$ ,

extending the entire length and opening through the ends of such pan.

$c^2$  is an overflow-pipe, and  $c^3$  is an outlet-pipe, of the pan  $c$ , each provided with suitable cocks. This pan  $c$  is removably placed over the open top of the section  $a^3$  of the furnace  $a$ , the rear ends of the flues  $c'$  opening into the chimney  $a^4$ .

$d$  is an ordinary pan placed over the open portion of the front section,  $a^2$ , of the furnace  $a$ . This pan does not extend quite to the end of the section, but leaves an open space between it and the pan  $c$ . Across the open space between the two pans is removably placed the deflector  $e$ , (more fully shown in Fig. 3,) which consists of the sides  $e'$   $e^2$ , the sloping front  $e^3$ , and the top  $e^4$ , the rear being left open, as shown, and of a height sufficient to cover the flues  $c'$  in the pan  $c$ .

$f$  is a pipe passing through the side  $e'$  and extending across the body of the deflector to the side  $e^2$ , where it is closed. At a point near the closed end of pipe  $f$  is connected the vertical pipe  $g$ , having the branches  $g'$  and  $g^2$ , extending to the pans  $c$  and  $d$ , respectively, both being provided with suitable cocks.

The operation of evaporating the sap by my improved apparatus just described is as follows: The tank or reservoir which holds the sap is suitably connected to the open end of the pipe  $f$  of the deflector  $e$ , such tank being placed at a height sufficient to give the requisite amount of head. The deflector  $e$  having been placed in position between the pans  $c$  and  $d$ , and the valve  $b'$  in the flue  $b$  being closed, the sap is allowed to flow from the tank into the pipe  $f$ , and from thence through pipes  $g$  and  $g'$  into the evaporating-pan  $c$ . As the sap passes through pipe  $f$  it is warmed by the heat of the furnace, which passes from the section  $a^2$  through the deflector  $e$  and in contact with pipe  $f$ , and from thence the heat, passing through the flues  $c'$ , serves to raise the temperature of the warmed sap discharged into the pan  $c$  and around its flues  $c'$ , thus effecting the requisite evaporation and condensation of the sap. The overflow of the heated and condensed sap is discharged through pipes  $c^2$  into the pan  $d$ , where its temperature is maintained and its evaporation continued until the proper time for its removal, when it is then subjected to process commonly known as



"sugaring off." By using a number of these pans *d*, the overflow from the pan *c* can be uninterruptedly taken care of until the contents of the sap tank or reservoir is exhausted. When the supply of sap is exhausted, the deflector *e* can be quickly removed, and the open space which it occupies can be closed by a cover, *h*, preferably of the form shown in Fig. 5, and the heat of the furnace is then conducted directly to the chimney through the flue *b*, its valve *b'* having been opened. The overflow-pipe *c'* being above the line of the flues *c'*, allows a sufficient quantity of the condensed sap to remain in the pan *c* to protect the flues from being burned by the intense heat before it is shut off from such flues by the removal of the deflector *e*, thereby preventing the burning of the sap which remains in the pan. This surplus sap can be drawn off through the outlet-pipe *c'*.

The heating of the sap before its introduction into the evaporating-pan *c* in the manner hereinbefore explained is an important element in my invention, as it effects a great economy in the time required to reduce the sap to the proper consistency.

I claim—

1. An evaporator for maple-sap, consisting of a sectioned furnace, two or more evaporating-pans, and a removable deflector, through which the pipe which conveys the sap to the first evaporating-pan passes, all combined and

operating substantially as shown and described.

2. In an evaporator for maple-sap, the removable deflector *e*, having the supply-pipe *f* passing therethrough and provided with suitable connections, as and for the purpose stated.

3. In an evaporator for maple-sap, the combination, with the furnace *a*, having the sections *a'* *a''*, and the flue *b*, with its valve *b'*, of the evaporating-pan *c* and the removable deflector *e*, substantially as shown and described.

4. In an evaporator for maple-sap, the combination, with the furnace *a*, having the sections *a'* and *a''*, and the flue *b*, with its valve *b'*, of the pan *c*, having the flues *c'* and overflow-pipe *c'*, the pan *d*, and the deflector *e*, substantially as shown and described.

5. In an evaporator for maple-sap, the combination, with the furnace *a*, having the sections *a'* and *a''*, and the flue *b*, with its valve *b'*, of the pan *c*, having the flues *c'* and overflow-pipe *c'*, the pan *d*, and the deflector *e*, having the pipe *f* passing into such deflector, the pipe *f* being provided with the branches *g g'*, substantially as and for the purpose stated.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWIN SLAGHT.

Witnesses:

W. T. MILLER,  
OTTO HODDICK.