

D. M. COOK.
Evaporating Pan.

No. 37,737.

Patented Feb. 24, 1863

Fig. 1.

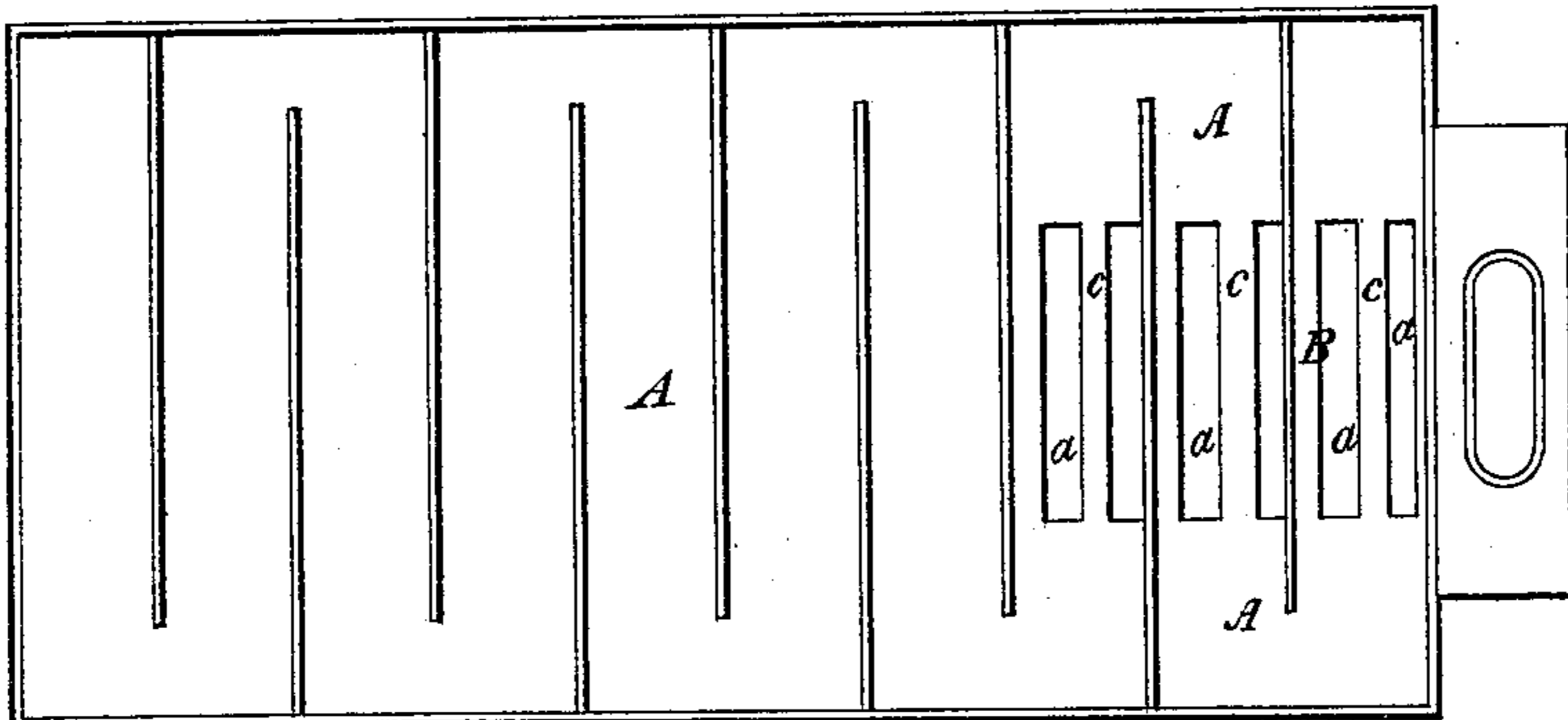


Fig. 3.

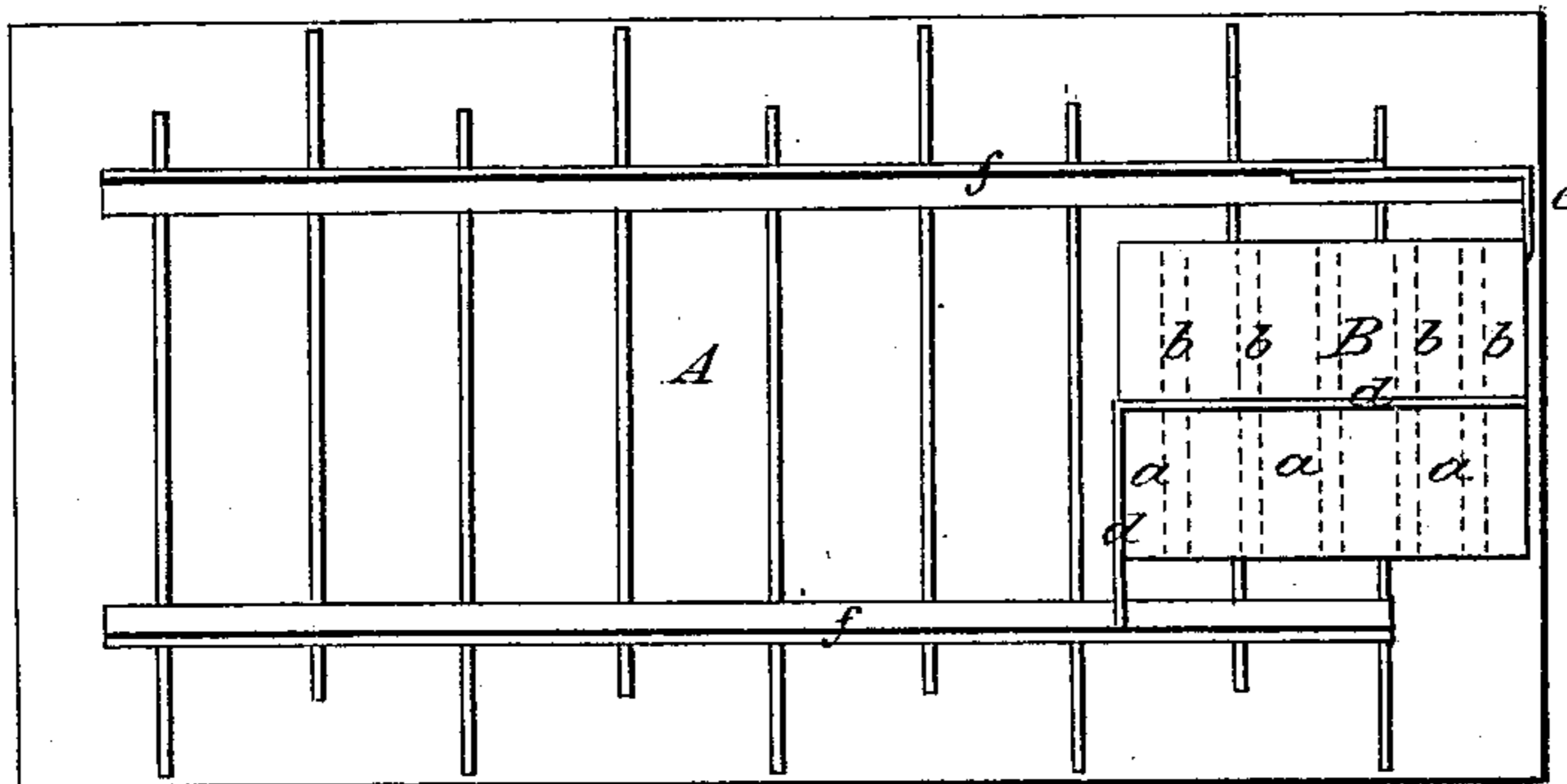
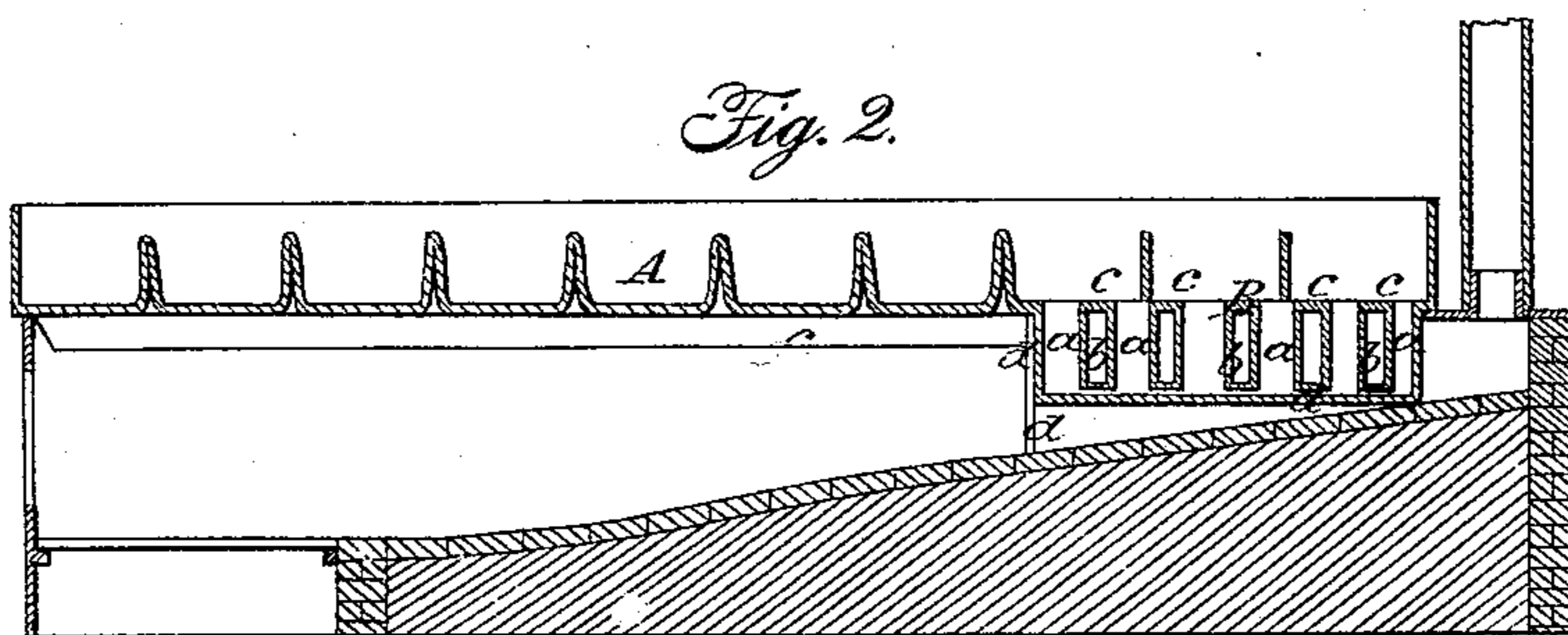


Fig. 2.



Witnesses:

Gustave Dietrich
Cha. W. J. H. H. H.

Inventor:

D. M. Cook
Mason, by Lawrence

UNITED STATES PATENT OFFICE.

D. M. COOK, OF MANSFIELD, OHIO.

IMPROVED EVAPORATING-PAN WITH TUBULAR BOILER.

Specification forming part of Letters Patent No. 37,737, dated February 24, 1863.

To all whom it may concern:

Be it known that I, D. M. COOK, of Mansfield, in the county of Richland and State of Ohio, have invented a new and Improved Shallow Evaporating-Pan and Tubular Boiler United for Evaporating Sugar-Juices; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a plan or top view of a shallow evaporating-pan and tubular boiler with cells and flues. Fig. 2 is a vertical longitudinal section of the same. Fig. 3 is an inverted plan of the pan and boiler.

Similar letters of reference in the several figures indicate corresponding parts.

The nature of my invention consists in a shallow evaporator-pan with a deep boiler, which is divided up into narrow cells by means of tubes, which form flame-flues, the pan and boiler being in one evaporator, as will be hereinafter described.

My invention also consists in an arrangement of flame-directors with respect to the ordinary guards and the transverse flues of the tubes, whereby the flame is turned at right angles when it arrives at the flues, and then allowed to take a course through the flues and to the smoke-flue.

To enable others skilled in the art to make and use my invention, I will proceed to describe the same with reference to the drawings.

A is the part which I term the "shallow evaporating-surface," and B, the part which I term the "boiler." The size of these parts relatively may be increased or diminished. The depth of the boiler may be increased or decreased, as circumstances may demand. Through the sides of the boiler, at a point below the level of the shallow evaporating-surface A, I insert a series of oblong tubes, *c*, diagonally or straight across the evaporator, as shown. These tubes divide the boiler into cells *a a* and form flame-flues *b b*. The tubes might be of any other practical form; but the form shown answers well. The flues might be secured by folding the metal by crimping, and then placing a plate under the bottom of

all the folds, and closing the ends of every alternate fold. This would be the cheapest, as the bottom of the boiler B would be formed with the folds out of one piece of metal.

It is a good plan to have the evaporating-surface extend laterally on each side of the boiler B, as shown; but I do not confine myself to such lateral extension thereof, as the boiler might extend to the sides of the pan. It is also a good plan to have the juice circulate on a zigzag course; but I do not confine myself to any particular mode of regulating the flow of the juice or arresting the impurities.

To direct the flame through the transverse flues, I project down from the plate which forms the bottom of the boiler, and from the bottom of the pan, an angular director, *d*, the said director closing off the flame-passage on one side of the boiler, and also reflecting back the waste heat to a certain degree. On the other side of the boiler, near the rear corner, another angular director or stop, *e*, is projected down from bottom of the pan, so as to close off the flame-passage at that point. Thus, through the aid of the ordinary guards, *f f*, and these directors, the flame is compelled to take a course through the flues and then to the smoke-pipe. The arrows indicate the course of the flame or waste heat.

The pan and boiler may be arranged on a furnace of any description adapted for heating them; but the one shown will answer a good purpose.

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

1. A shallow evaporating-pan constructed with a deep boiler, when the boiler is divided into cells by means of tubes which form flame-flues, substantially as herein described.

2. The arrangement of the directors *d e* with respect to the combined boiler and shallow evaporating-pan, substantially as and for the purpose described.

Witness my hand in the matter of my application for patent on evaporating-pan this 22d day of January, 1863.

D. M. COOK.

Witnesses:

A. T. BATES,

W. H. BLYMYER.