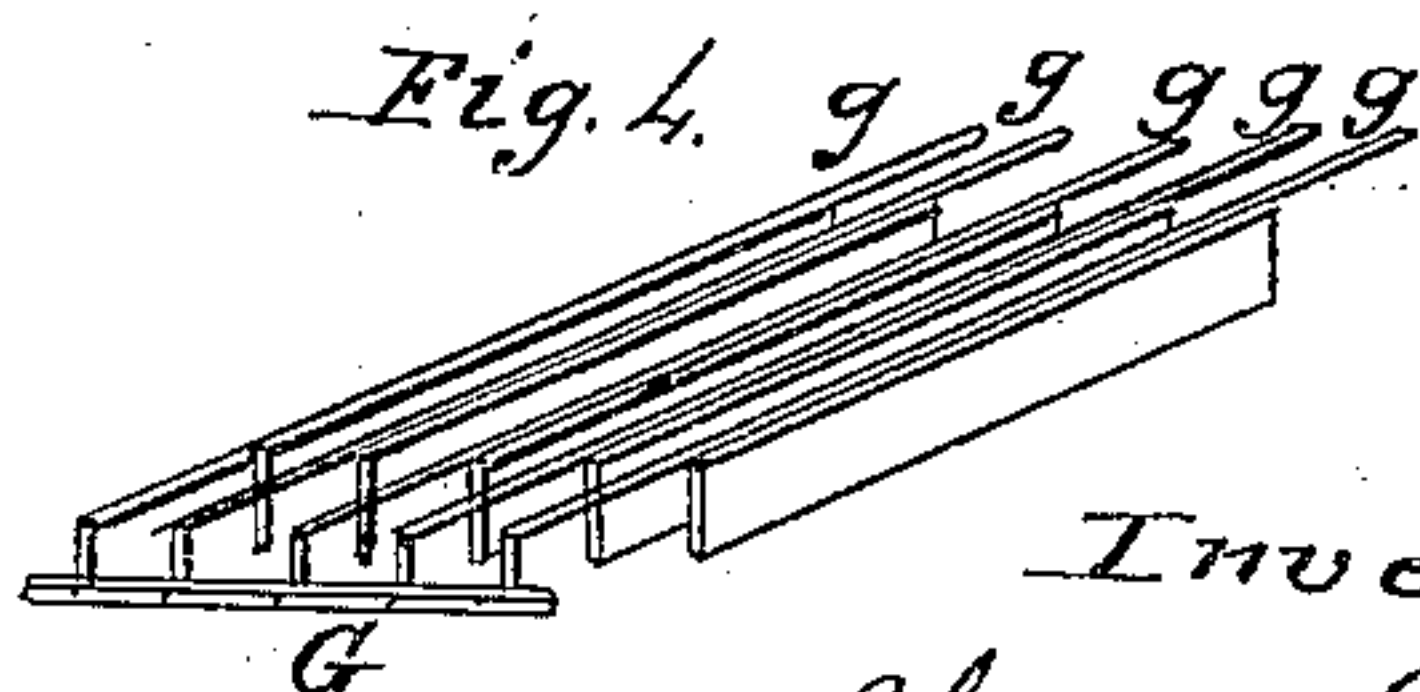
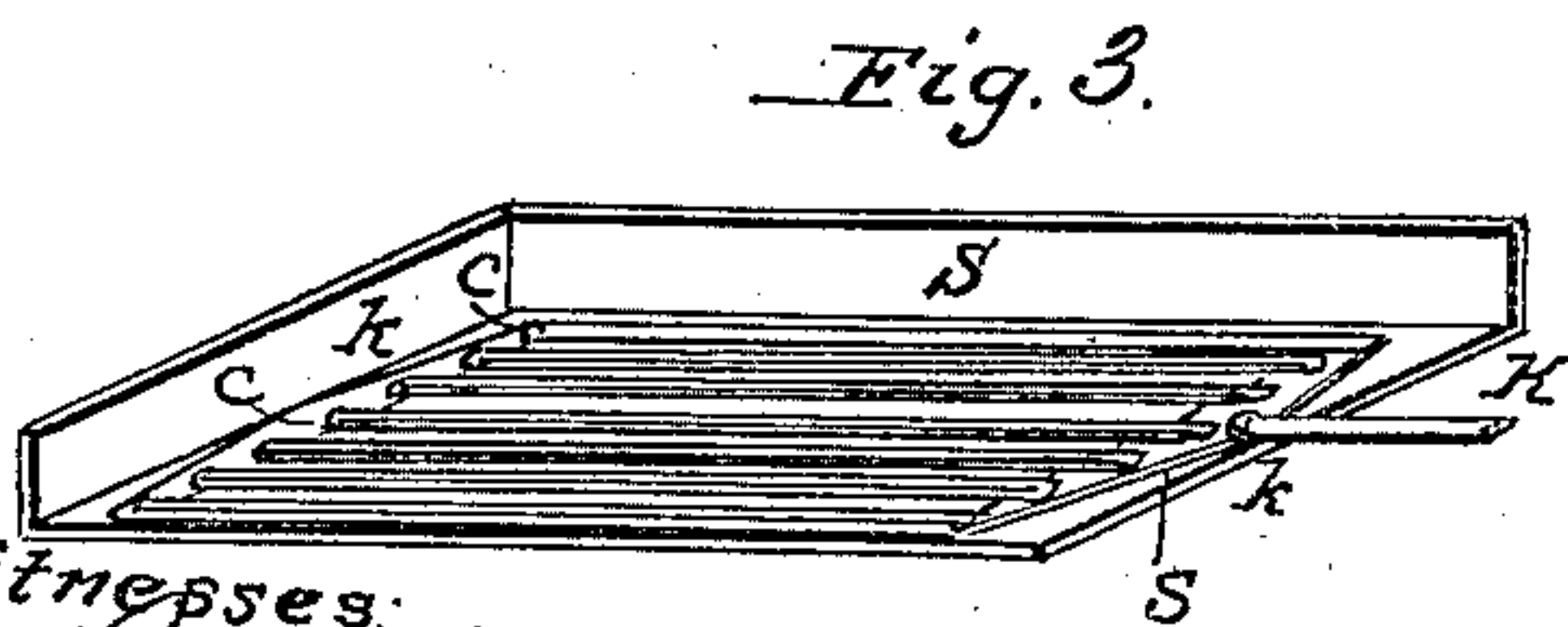
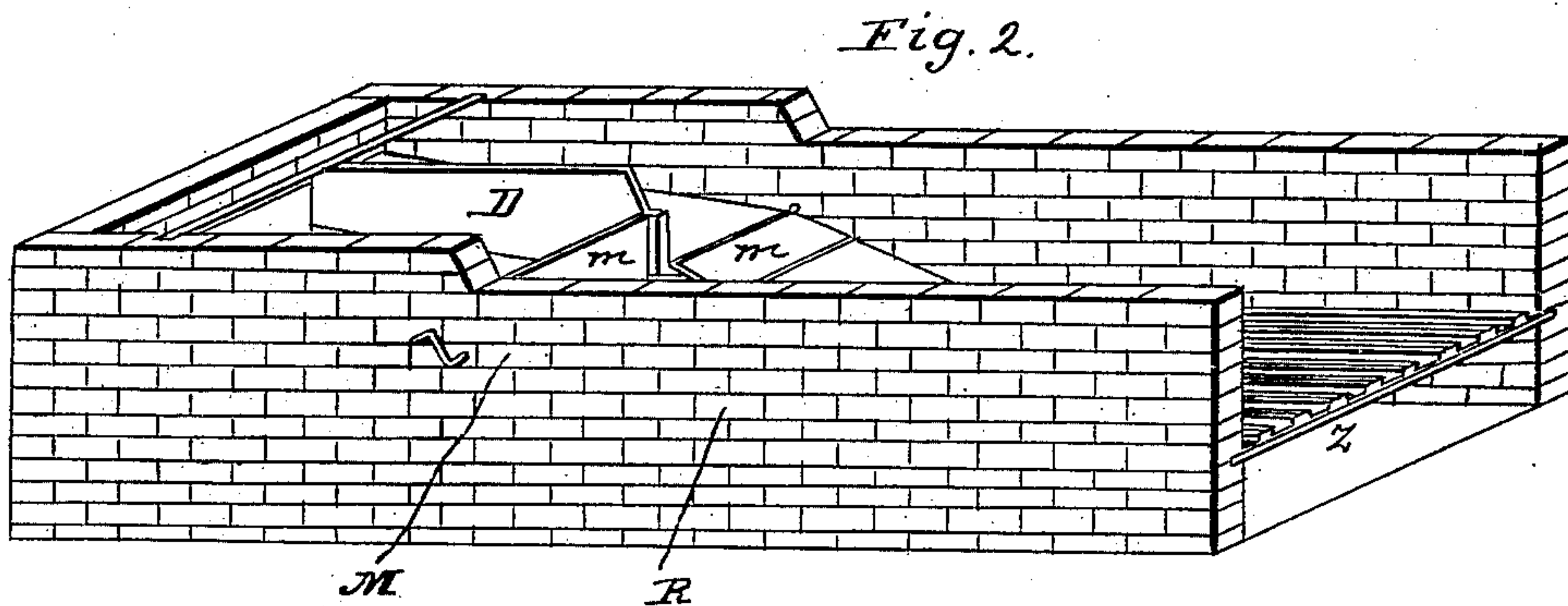
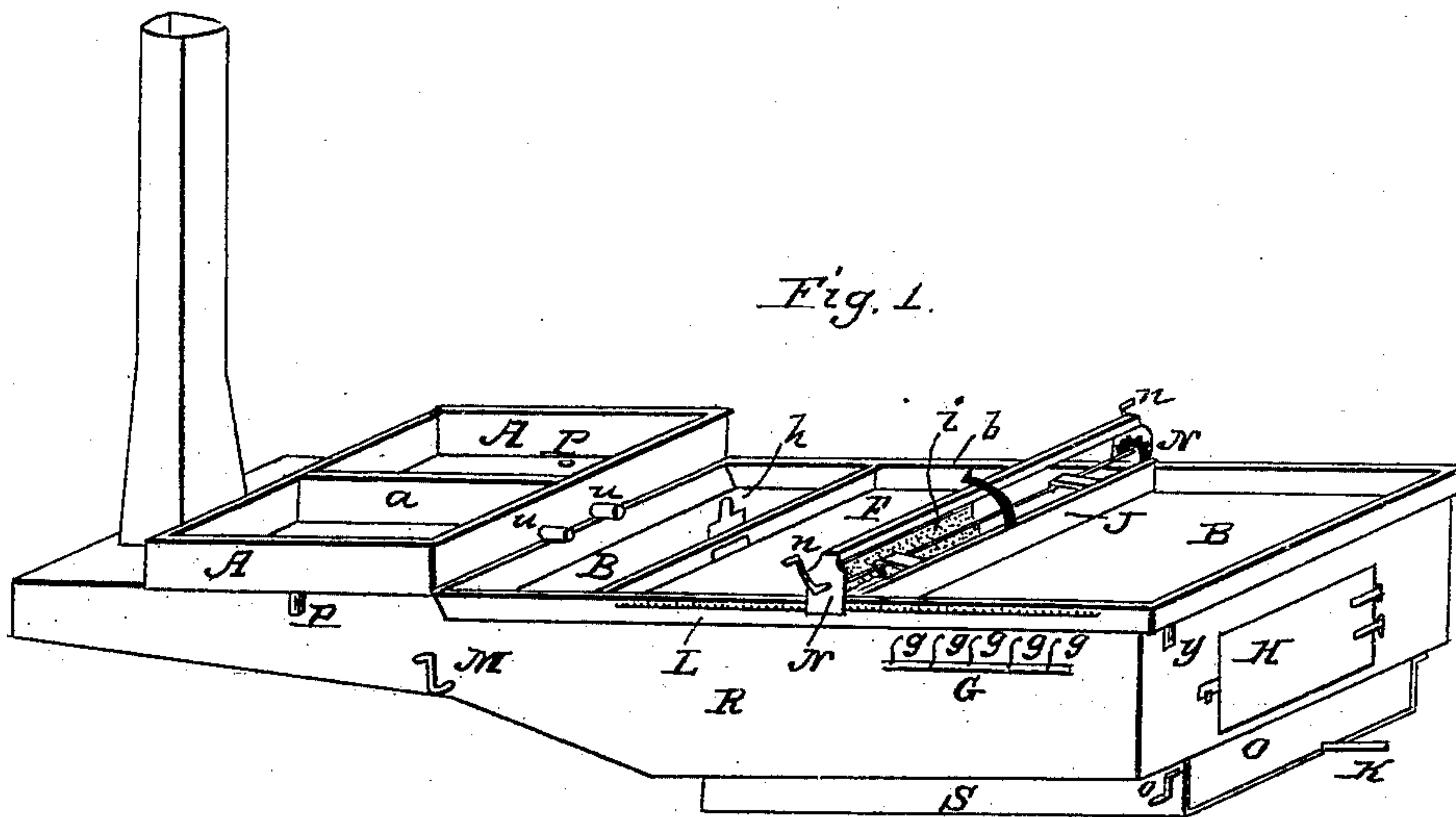


W. C. SMITH.
Sugar Evaporator.

No. 78,695.

Patented June 9, 1868.



Witnesses:
H. Baldwin
J. White

Inventor:
Wm. C. Smith

United States Patent Office.

WILLIAM C. SMITH, OF WARRENSBURG, MISSOURI.

Letters Patent No. 78,695, dated June 9, 1868.

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, WILLIAM C. SMITH, of Warrensburg, in the county of Johnson, and the State of Missouri, have invented a new and improved Sugar-Evaporator; and that the following description, taken in connection with the accompanying drawings hereinafter referred to, forms a full and exact specification of the same, wherein I have set forth the nature and principles of my said improvements, by which my invention may be distinguished from all others of a similar class, together with such parts as I claim, and desire to have secured to me by Letters Patent.

This invention relates to a new and improved sugar-evaporator, designed, more especially, for the application of a new chemical clarifying process, and evaporating the juice of the sorghum and other sugar-canes, and to admit of the work being accomplished in a perfect manner by persons of ordinary ability.

In the accompanying sheet of drawings—

Figure 1 is a perspective view of my invention in a portable form, which may be mounted upon wheels or legs.

Figure 2 is a perspective view of the interior, with the fire, front, pans, and chimney removed; of the furnace in a stationary form, composed of brick-masonry.

Figure 3 is a view of the ash-pit, S, disconnected from the main body, fig. 1.

Figure 4 is an interior view of the construction of the damper G, disconnected from the main body.

Similar letters of reference indicate corresponding parts.

R represents the body of the device, which may be constructed either of sheet-iron or cast-iron plates, for portable apparatus, and of brick or stone-masonry for stationary purposes, and is mounted by two main pans, the clarifying-pan A A, divided into two compartments by the partition *a*.

The bottom and back of the pan A A should be made of sheet copper. The front, ends, and partition may be composed of wood, and the evaporating-pan, B B, is divided into two compartments by the partition *r*, connected by the gate *h*, the pan A A being elevated above the pan B B, so that its contents will flow, when desired, into the lower pan. The door H communicates with the fire-chamber, the grate of which is shown in fig. 2, indicated by the letter *z*.

S is the ash-pit; O is the door which communicates with it, and operated by the crank, *o*. The bottom of the ash-pit is composed of bars of iron, pivoted to two cross-bars, *s s*, which are also pivoted at *k k*, and furnished with a handle, K, as is represented in fig 3, the object of which is to catch the small coals as they fall through the upper grate, which supports the fuel, and thereby utilize a large portion which would be otherwise lost, and also to prevent the effects of a strong wind when operated in the open air. By shaking the handle K from side to side, the ashes will fall through, while the coals will be retained.

In fig. 4, *g g g g g* is a series of dampers, connected by cranks to the bar G, moving of which to the left brings the damper from a pendent to a horizontal position, to check, when desired, the boiling of the finishing-end of the pan B, and will be readily understood by reference to the drawings.

The space beneath the pan A A is divided into two flues by the partition D, composed of a cast-iron plate. At the mouth of the flues are the dampers *m m*, worked simultaneously by the crank M, so that by opening one the other is closed, thus alternately heating the contents of either compartment of the pan.

Upon each side of the pan B, which is composed of cast iron, is a row of cogs, one row of which is seen at L, on which is mounted a movable frame, F, carried by two small cog-wheels, one of which is seen at *e*; and is kept in position by its heads, N N, composed of cast iron, having flanges, which engage the under side of the bars containing the cogs, and through which runs the shaft, to which are secured the cog-wheels, and having attached at the rear a skimmer, *i*, represented as being broken off at one end. In front is attached a driver, J, having a handle, *b*, by means of hinges, and can be raised from the bottom of the pan, when desired, by turning the cranks *n n*. The frame, with its attachments, is moved in either direction lengthwise of the pan.

In operating the above-described invention, the pans A A are filled with juice containing the defecating-

agent, and also a sufficient quantity in the lower pan to prevent burning. Adjust the dampers *m m* so as to turn the heat all under one compartment of the pan A A. When its contents are brought to the desired temperature, turn the heat under the other end. Now the defecated juice may be neutralized, settled, or otherwise treated, and drawn off into the evaporating-pan B B, the flow being regulated by the faucet, *u*, to correspond with the loss caused by evaporation. The flow can also be adjusted between the compartments of the pan B B, by the gate *h*, so that either of the compartments of the pan A A may be emptied and the sediment removed, and be refilled at the time the other has arrived at the proper temperature. P P are spouts, for drawing out the water used in rinsing the pans.

As the contents of the compartment B, in front of the driver J, become less by evaporation, they are kept at the desired depth by an occasional movement of the crank *n*, thus driving the sirup toward the finishing-end of the pan, which, when finished, can be instantly discharged at the spout Y, and conducted by a pipe to the cooler; then raise the driver J, and move it back to the other end, the skimmer carrying the scum before it, thus facilitating the work without danger of scorching the sirup.

I do not claim, in sugar-evaporators, the employment or use of a series of pans, arranged at different heights; neither do I claim a partition with a gate, nor a partition that can be moved or placed at different points in the pan, for they have been previously used; but

I do claim as new, and desire to secure by Letters Patent—

The pan A A, as arranged on the body R of the device, and used in connection with the flues formed by the partition D and the dampers *m m*, and the pan B B, divided by the partition *r*, having a gate, *h*, when used in connection with the movable frame F, carrying the skimmer *i*, and a driver, J, moving upon the cogs L, by means of the cog-wheels *c*, operated by the cranks *n n*, and used substantially as described, and for the purposes set forth.

I further claim the dampers *g g g g*, with the connecting-bar G, and the ash-pit S, when applied to a sugar-evaporator, substantially as and for the purpose specified.

WM. C. SMITH.

Witnesses:

S. T. WHITE,
R. BALDWIN.