

Portable Evaporator.

Henry L. Plumb.

72326

PATENTED

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Fig. 1.

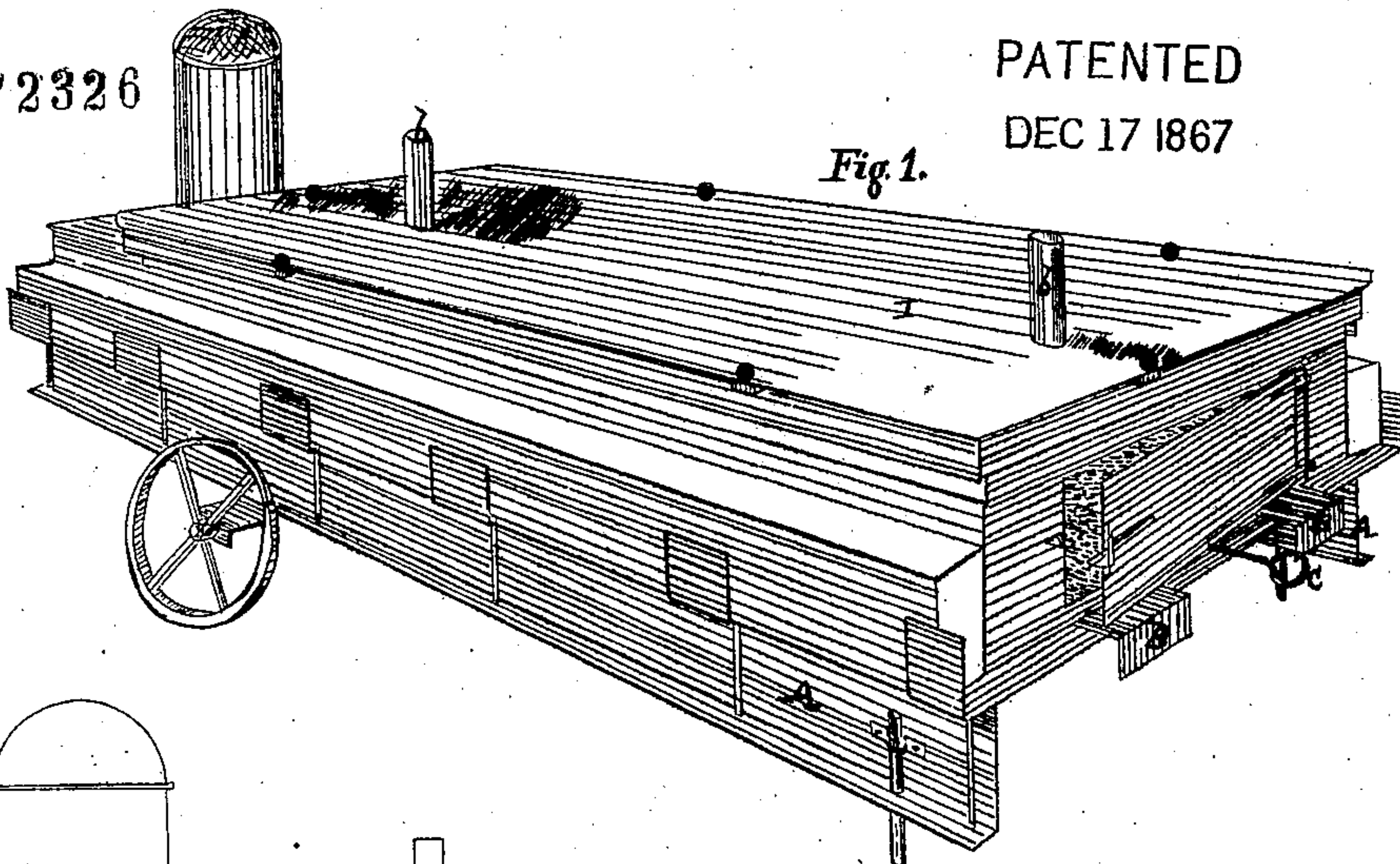


Fig. 2.

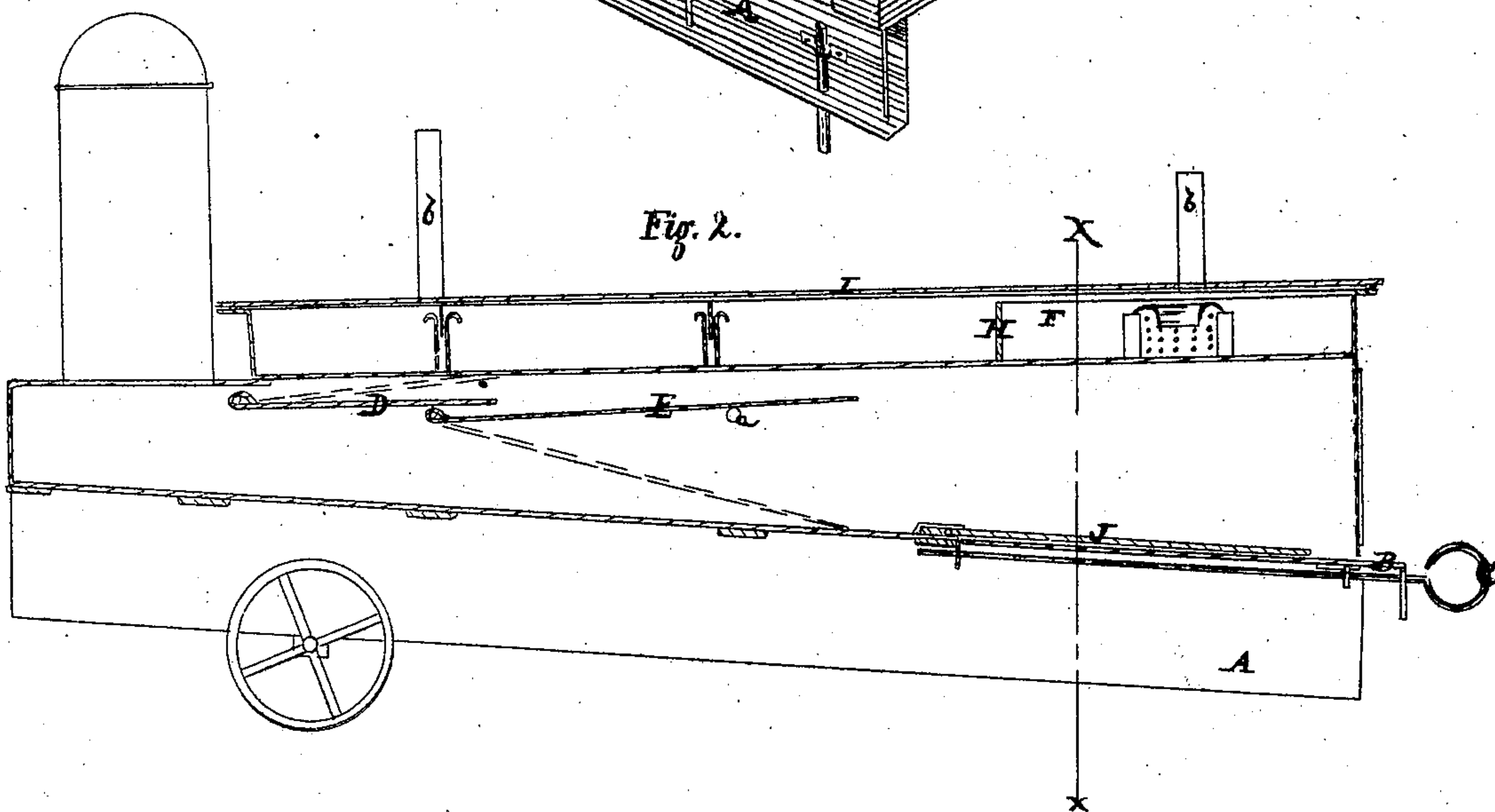
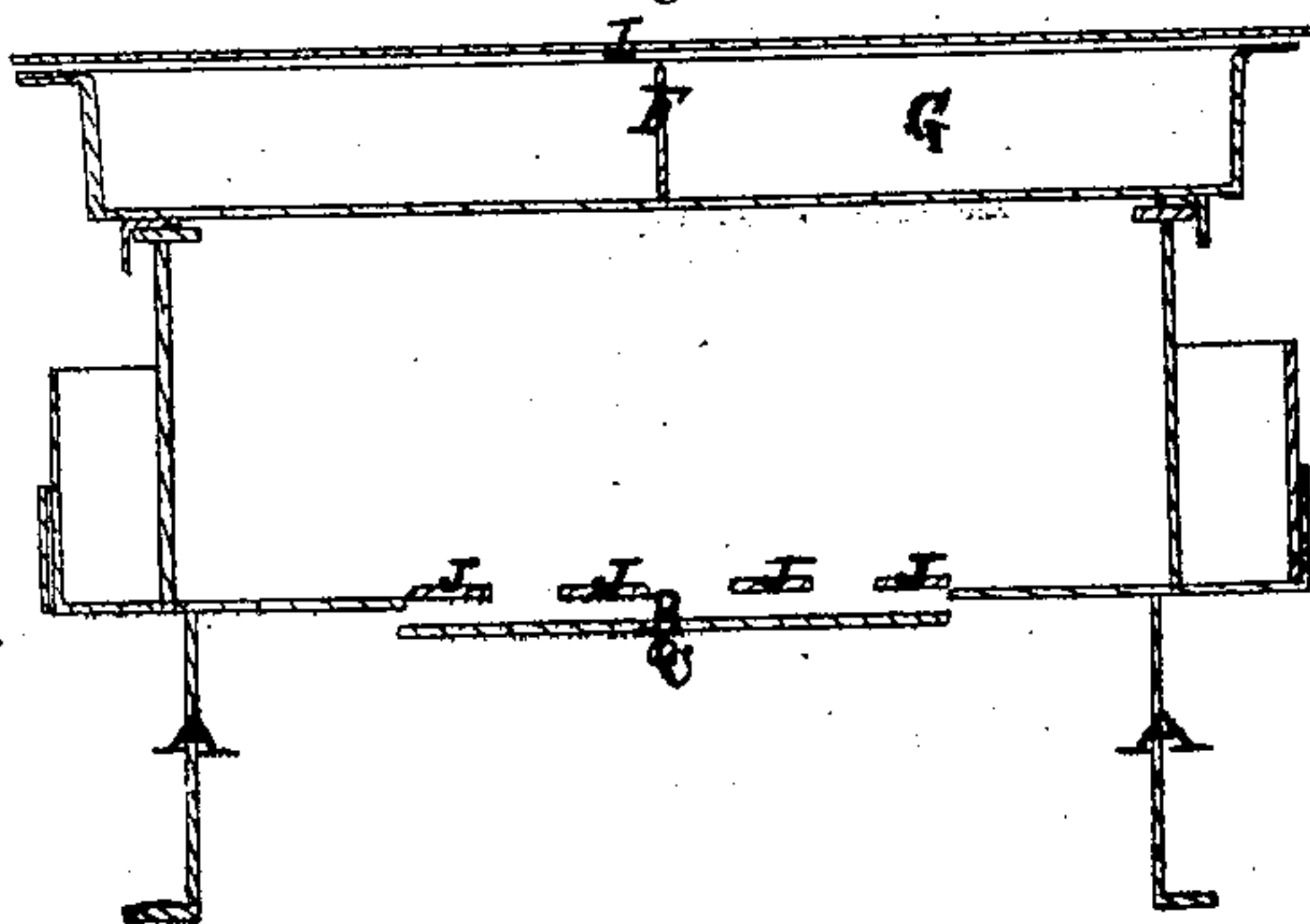


Fig. 3.



Witnesses.

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Letters Patent No. 72,326, dated December 17, 1867.

IMPROVED PORTABLE 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, HENRY L. PLUMB, of Hamer, in the county of Paulding, and State of Ohio, have invented a new and useful Improvement in Portable Evaporators; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a perspective view of my invention.

Figure 2 shows a vertical longitudinal section of the same; and

Figure 3, a vertical cross-section on the line *x x*, fig. 2.

My invention consists in an improved form of portable evaporator, adapted to the making of sirup or molasses from the expressed juice of the Chinese sugar-cane.

It consists of a furnace, supported on the end of a suitable frame, which is supported on wheels. The frame, together with the whole fire-chamber, is made of sheet iron, properly braced by iron rods, and the several parts firmly riveted together. It is shown at fig. 1, where *A A* are the side pieces of sheet iron, with a flange at the lower edge of each, and corrugated lengthwise for additional strength. Running the whole length of the fire-chamber, and across the top edges of these side pieces, are rods or bars of folded sheet iron, the ends over and outwards, and the same turned up at right angles. On these rods the grate and fire-chamber are supported. The sides and floor of this fire-chamber may be of one or two thicknesses of sheet iron, as desired, and the floor rises from the grate to the chimney, so that while the evaporator is in use, and the wheels under the grate removed for the greater stability of the whole, the upper edges of the evaporating-pan may be in a position nearly level. An opening is made in the floor, directly under the grate, for the admission of air, which opening may be closed altogether, if desired, by the damper *B*, of sheet iron, underneath the grate. This damper, *B*, is inserted under the end of the fire-box, and rests upon the end cross-bar and the rod *C*, passing through the same and the second cross-bar. In the end of the fire-box is an opening for fuel, which is closed by a door. The grate, *J*, is constructed in the ordinary manner, hinged at the end farthest from the door, and is so adjusted that the other end may be made to drop through the opening in the floor, for the purpose of clearing it, or for putting out the fire when the heat should be too intense. Near the other end of the fire-chamber are the dampers *D* and *E*, fig. 2, of sheet iron, secured at one end to rods passing through the sides of the fire-chamber at proper points, the free ends being toward the grate. By means of these dampers the heat may be regulated perfectly, and the evaporation conducted in the most perfect manner. The damper nearest the grate is much larger than the other, and its free end rests upon the floor of the fire-chamber, while the other damper rests upon the rod on which this one is turned. In this position the flames from the fire-box pass along under the surface of the evaporating-pan to the chimney. Should the heat be too great, and the evaporation proceeding too rapidly, the large one may be raised and the end supported by the rod *a* passing through the sides of the chamber. Then the flames will pass above and below the dampers, and their intensity lessened thereby; or should the heat be still too great, the damper *D* may also be raised up to the pan, thereby cutting off nearly all the heat. The cross-bars, on which the fire-chamber rests, project beyond the sides, and are turned up at right angles, and there is laid a strip of sheet iron upon these, which, together with similar strips held by the upright portions of the cross-bars, form a chamber which may be filled with sand or earth, thereby preventing a great loss of heat by radiation. On the top of the fire-chamber rests the pan for evaporating the juice of the cane, which is made in the form and with the partitions represented in fig. 2. The end having a longitudinal partition is placed on the fire, and one of these forward compartments, where the heat is most intense, is used to receive the juice from the tub, and after it has been heated sufficiently to have most of the impurities rise to the surface, from whence they may be removed by suitable skimmers, it is allowed to pass through the gate in the partition *F* into the compartment *G*, where it is still subjected to the greatest heat of the furnace, and when sufficiently evaporated it passes through the gate, in the cross-partition *H*, to the next compartment in the rear, as the pan is slightly inclined downwards from the fire, and so on through the different compartments to the last, from which it is drawn off as sirup or molasses. In addition to the gates in each partition, there are strainers, one to each opening, through which the juice must flow in its passage, and thus it becomes free from all impurities. To the top of the evaporating-pan is fitted a cover, *I*, which is used to prevent any foreign substances from falling into the pan, and especially rain, which often causes great loss where the pan is allowed to be uncovered. This cover may, by

screw-bolts, or other suitable devices, be secured to the pan, and by placing a packing of rubber or leather between the two, the apparatus may be used to great advantage by the farmer in steaming vegetables for the feeding of stock, and in order that it may be so used, pipes, *b b*, are inserted in the cover for supplying it with water and the escape of steam.

Having thus described my invention, its construction and operation, what I claim as new, is—

The longitudinal partition F over the fire-chamber, as and for the purpose set forth.

The grate J, constructed and operating in the manner shown and described.

The damper, arranged and operating in the manner shown and described.

Surrounding the fire-box of a portable evaporator with a jacket of sand or earth, substantially in the manner and for the purpose set forth.

In combination with the fire-box and evaporating-pan of a portable evaporator, the cover I, secured in place by screws or clamps, and provided with pipes *b b*, or their equivalents, for the purpose set forth.

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Witnesses:

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