

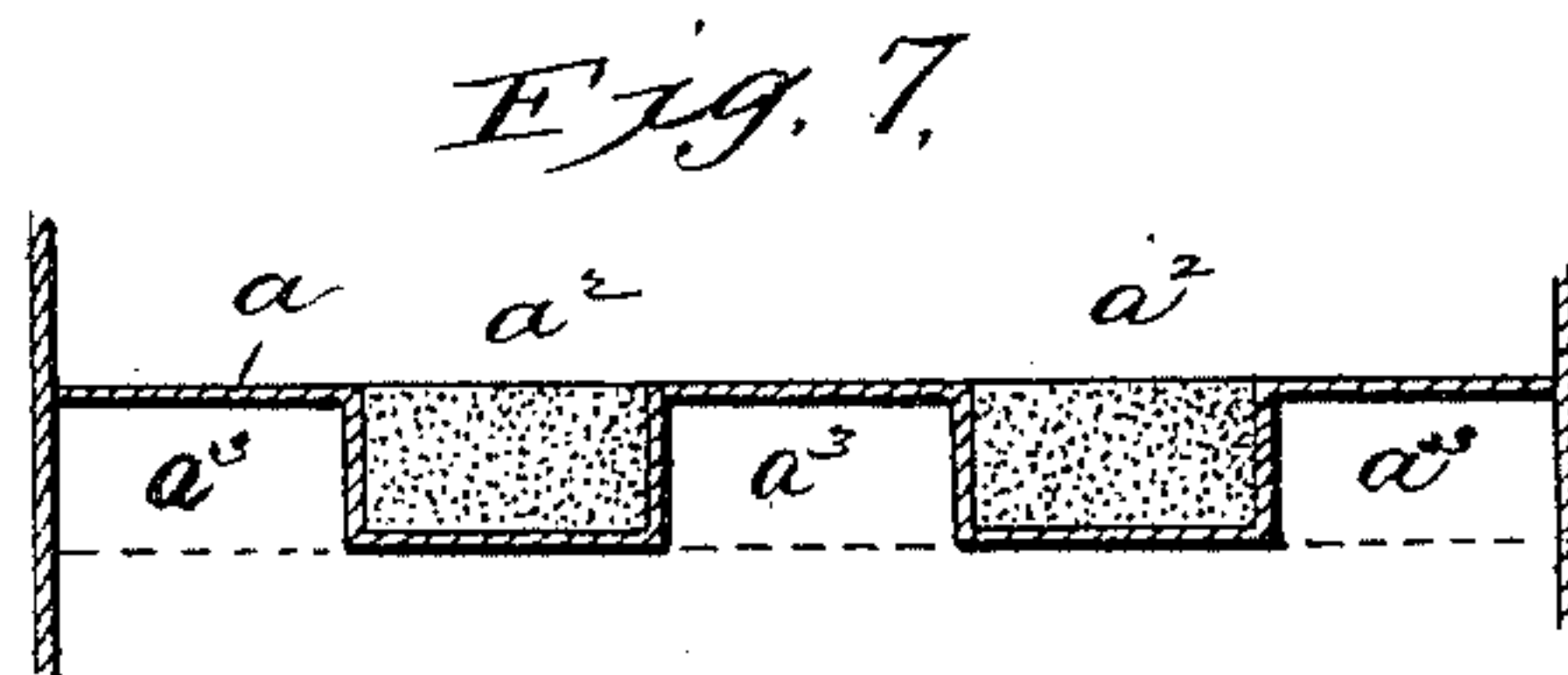
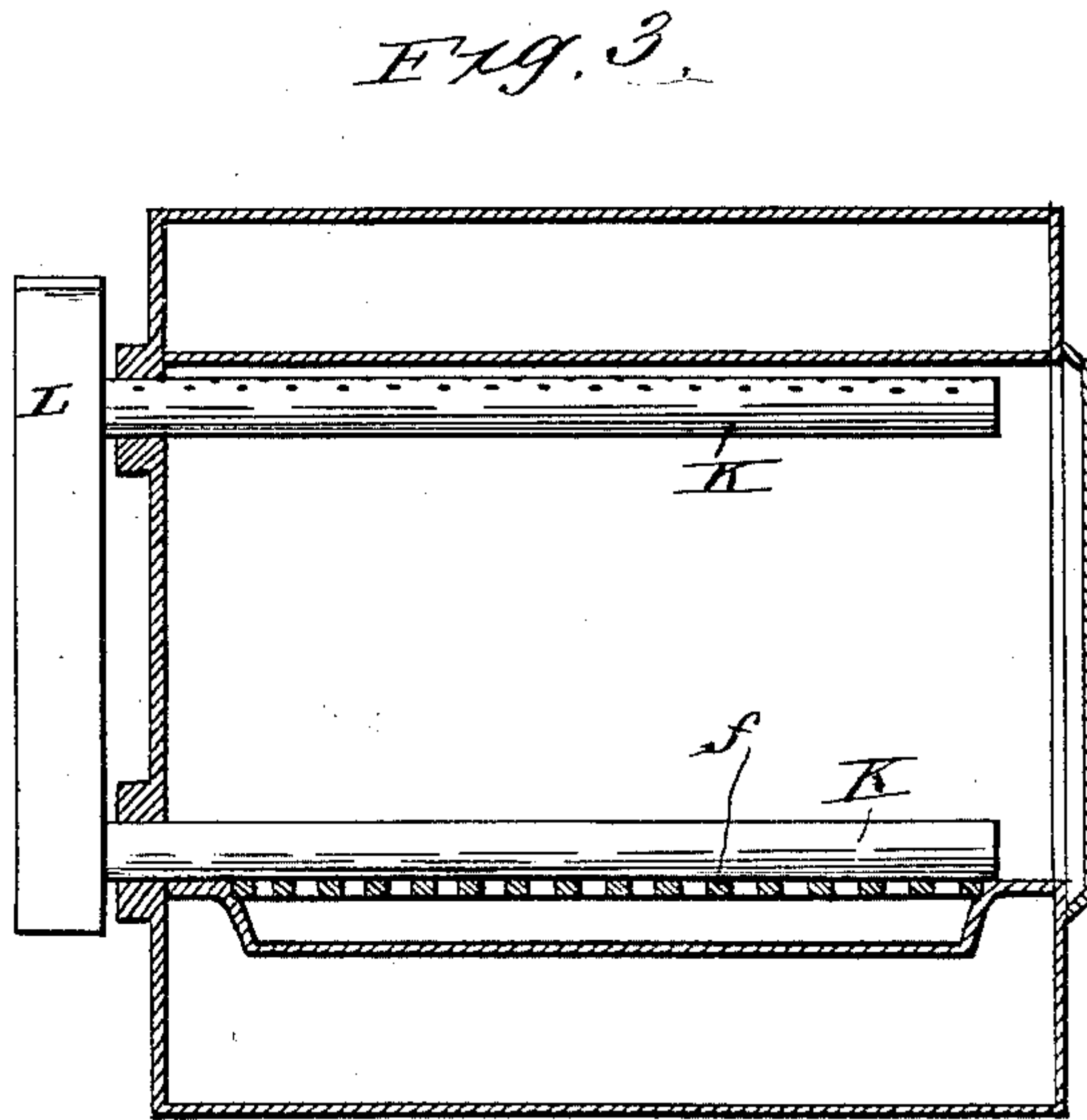
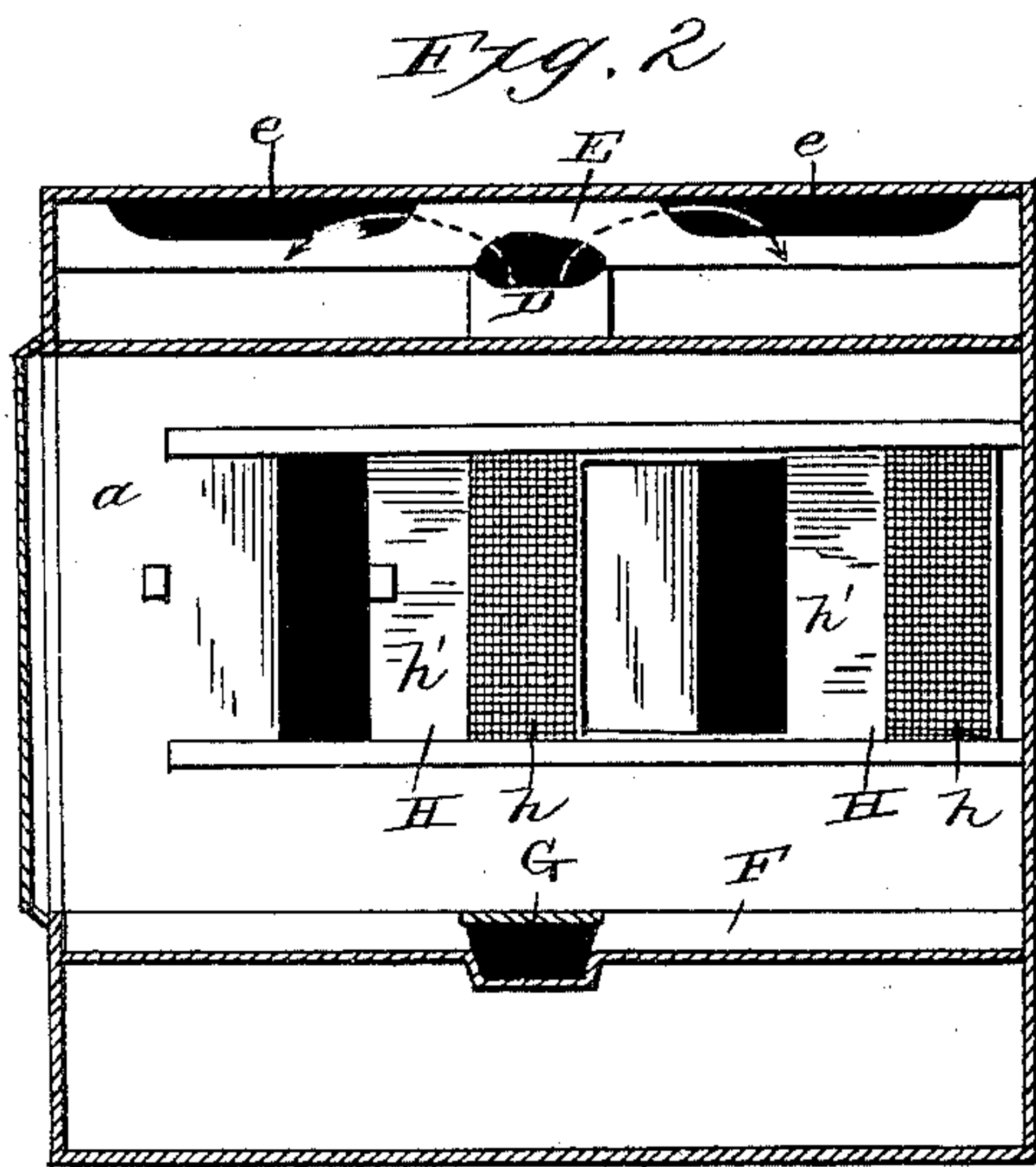
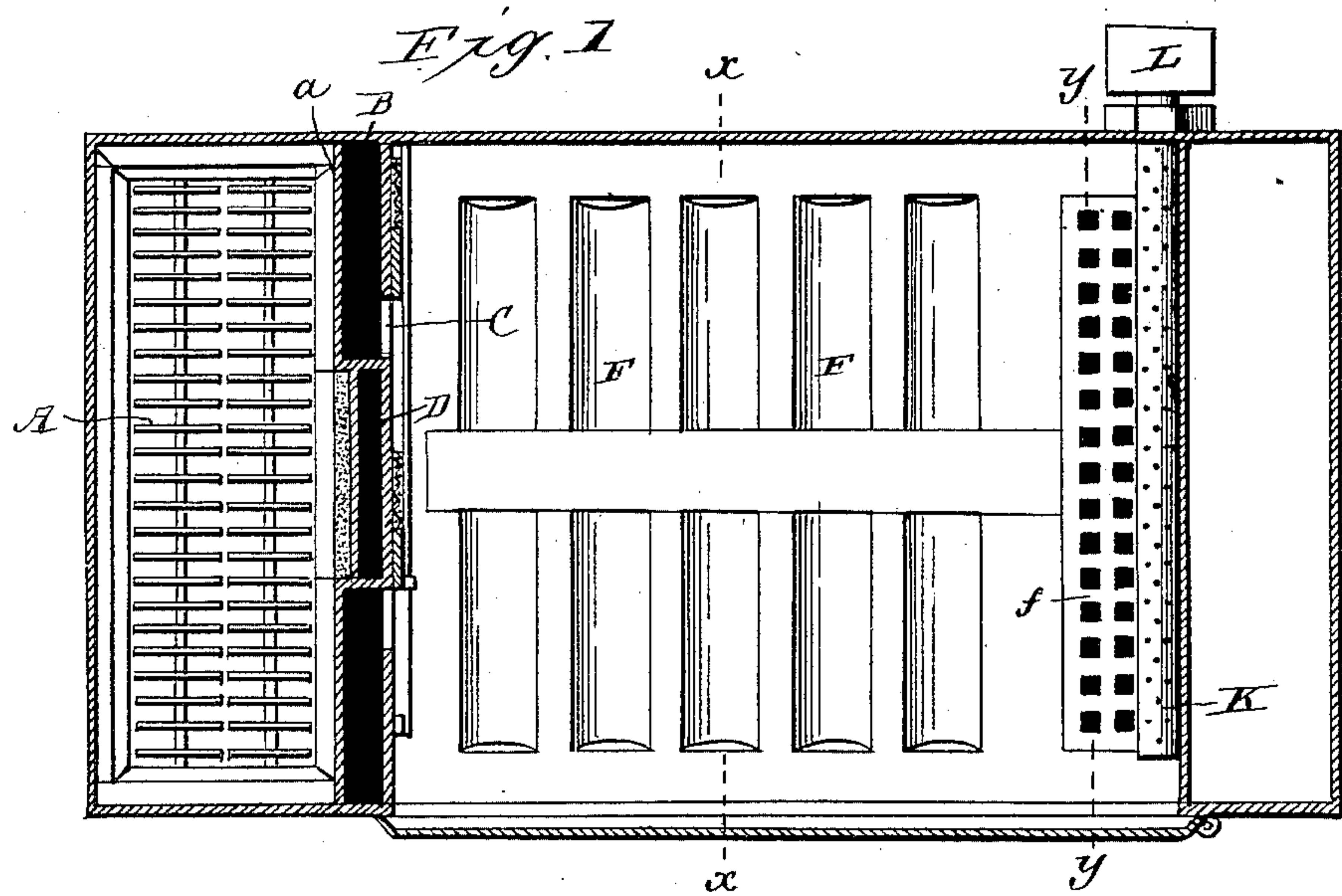
(No Model.)

2 Sheets—Sheet 1.

J. A. PRICE.
COOKING STOVE.

No. 433,093.

Patented July 29, 1890.



Witnesses
C. D. Smith
Alex. Stewart.

Inventor
John A. Price,
By his Attorneys
Charles H. Hurd.

(No Model.)

2 Sheets—Sheet 2.

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Fig. 4

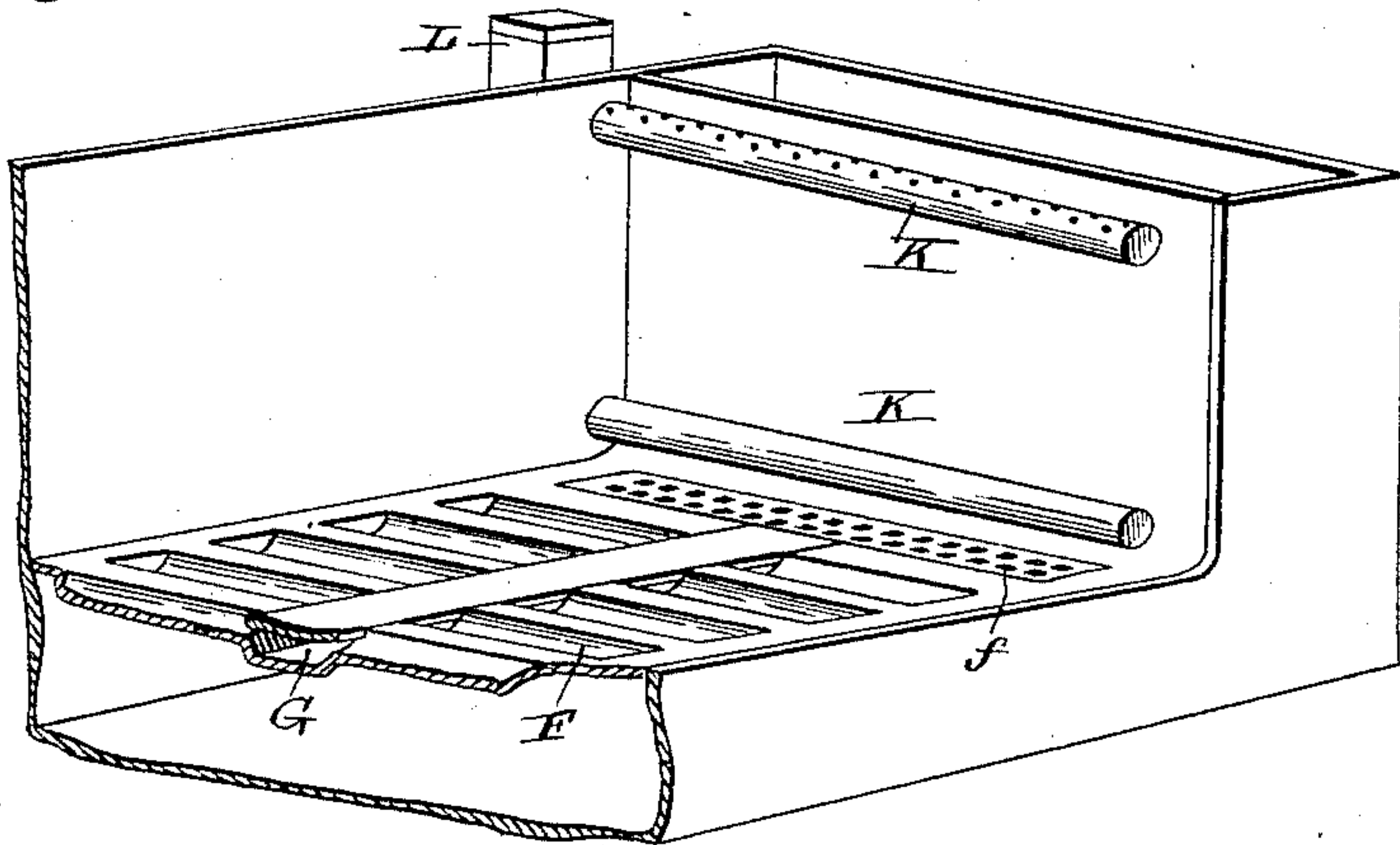
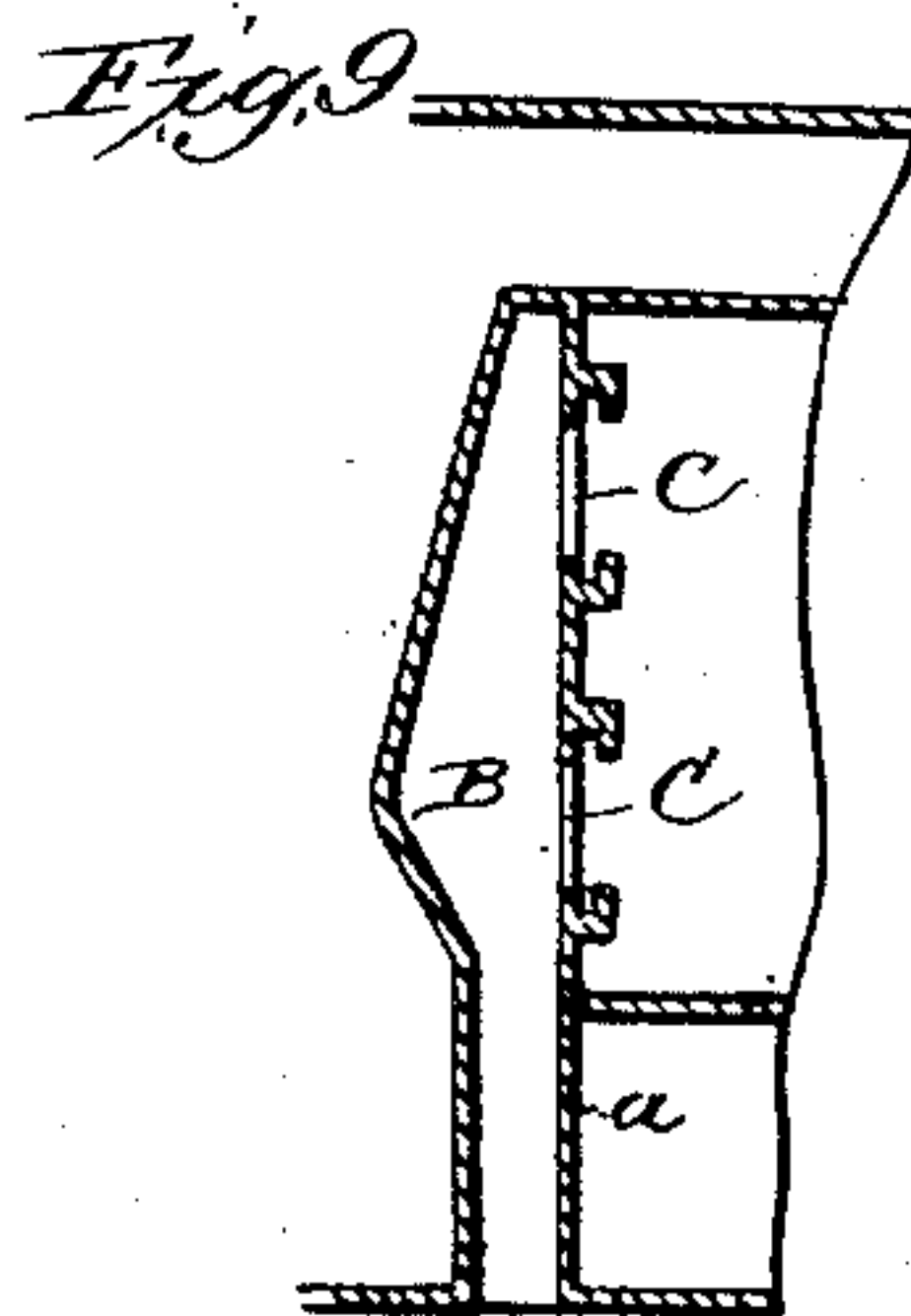
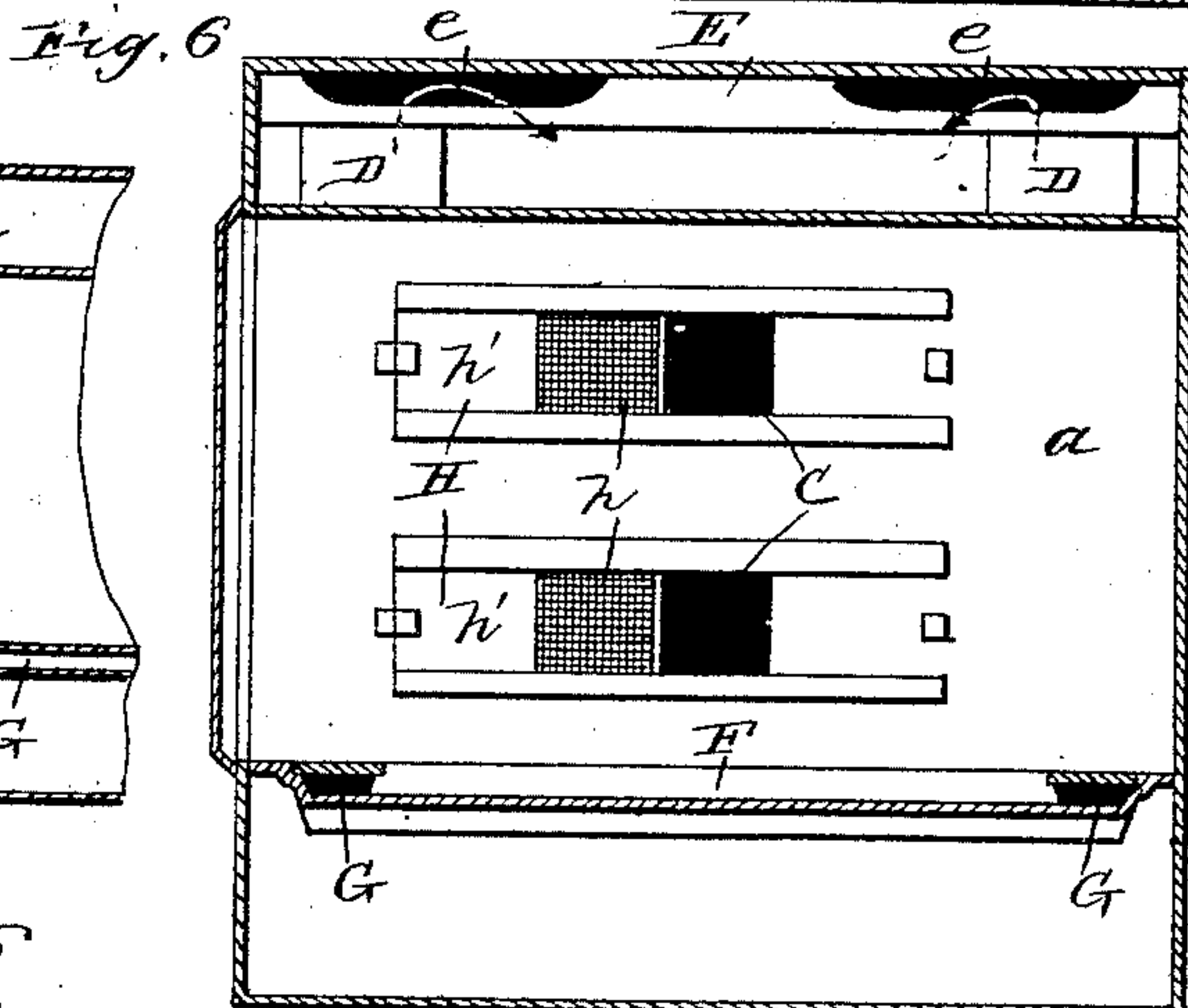
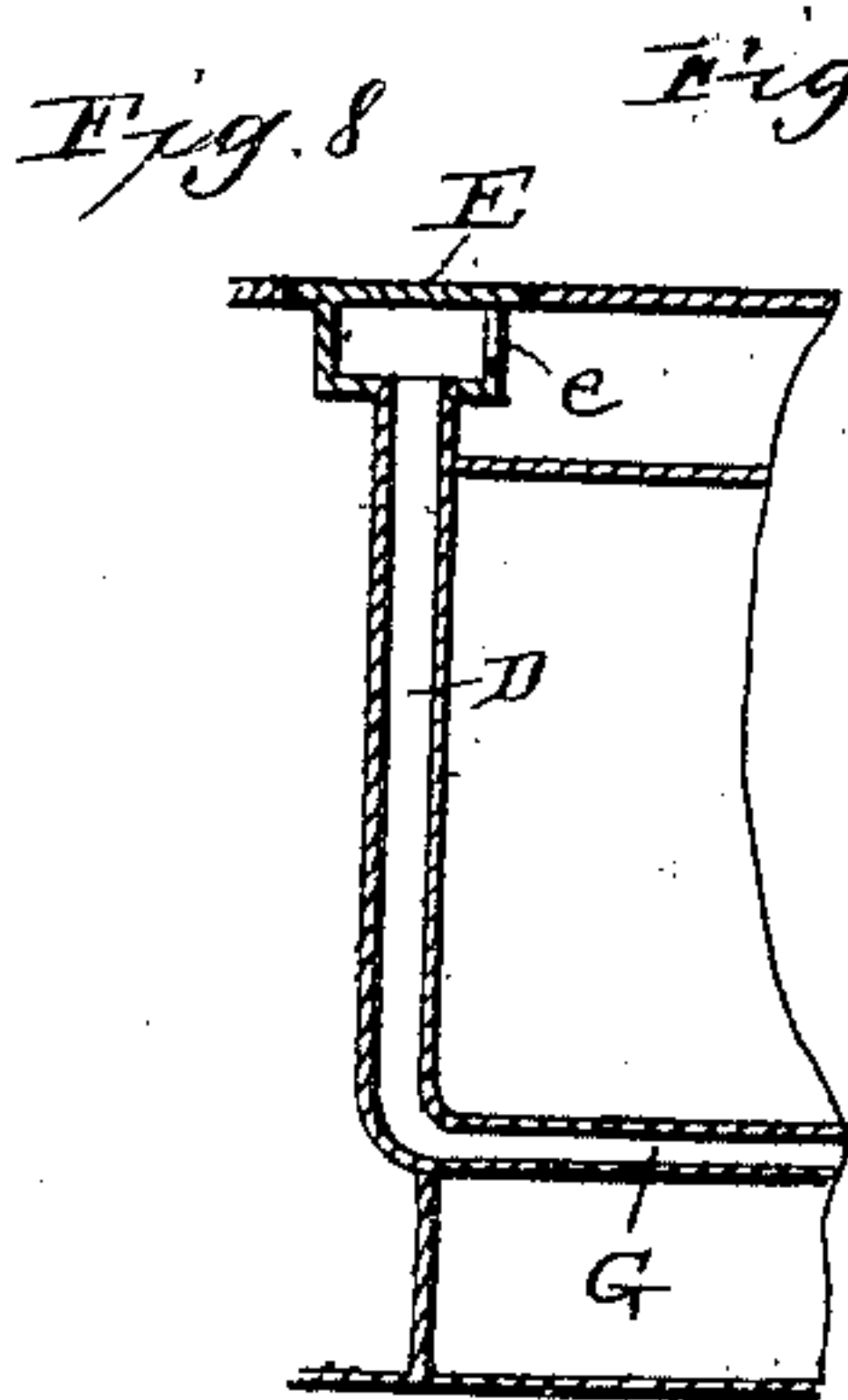
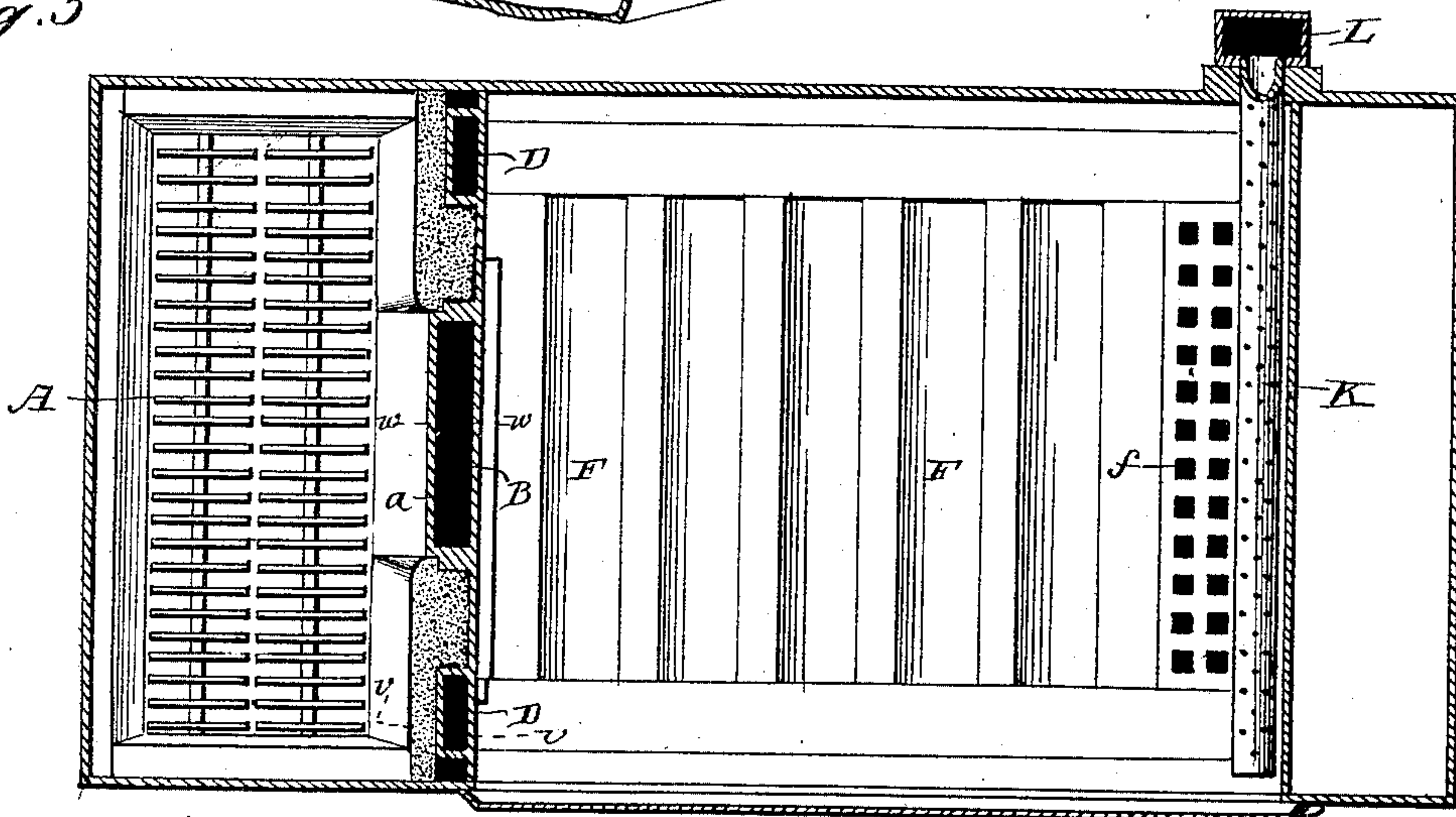


Fig. 5



Witnesses
E. D. Smith
Alex. Stewart

By his Attorneys

Inventor
John A. Price.
Church & Church

UNITED STATES PATENT OFFICE.

JOHN A. PRICE, OF SCRANTON, PENNSYLVANIA.

COOKING-STOVE.

SPECIFICATION forming part of Letters Patent No. 433,093, dated July 29, 1890.

Application filed October 10, 1889. Serial No. 326,551. (No model.)

To all whom it may concern:

Be it known that I, JOHN A. PRICE, of Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain
5 new and useful Improvements in Cooking-Stoves; 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, forming part of this specification, and to the letters of reference marked
10 thereon.

The present invention relates to certain improvements in cooking-stoves, and particularly to certain features of construction in
15 connection with the oven, the object being to increase the efficiency of the same and thereby produce food articles of better quality in a shorter time and at a lower temperature than can be done in the old oven; also to reduce the shrinkage to the very minimum.

The invention primarily consists in corrugating the bottom oven-plate of a stove having the usual fire-pot and smoke-flue, and providing ventilating-flues communicating
25 with said corrugations.

It consists, secondly, in providing a ventilating-flue for discharging air from the oven through a hollow bridge or cross-piece into the smoke-flue, and in combining therewith
30 a vapor-distributor, whereby the discharged air is moistened to assist combustion.

It consists, thirdly, in a novel form of vapor-generator for the oven.

It consists, fourthly, in an air-heating flue passing in proximity to the fire-pot and discharging into the oven above the bottom, in combination with a ventilating or air-discharging duct opening into the bottom of the oven and discharging above the oven, preferably into the smoke-flue; and, finally, it consists in certain novel details of construction and combinations and arrangements of parts, to be hereinafter described, and pointed out particularly in the claims at the end of this
45 specification.

Cooking or baking in fresh air that does not lower the temperature and thus retard the process is the *sine qua non* of food preparation. Thus in the system herein described,
50 and which, for the sake of convenience, I have denominated the "hypocaust system," the aim is to give all the air it will take, for the

fresh air, as in animal and vegetable life, cannot be detrimental to the preparation of food if it does not retard the process. A tight
oven in which there is no ventilation and circulation tends to lower the food condition proper by charring and destructive distillation, on the principle that all such processes
55 rely on the exclusion of the air, as in the charcoal-kiln, tar-pit, or lamp-black collector. By the hypocaust system this is completely reversed. The products may be said to be oxygenated instead of carbonized, and as the air does all by contact, the greater and more
60 uniform the contact the more effectual the operation, and, further, as oxygen tends to arrest destructive distillation and prevent carbonization, it may also combine, in some measure, with the particles of food in course
65 of preparation, and thus become a useful factor, combining, so to speak, a chemical with the mechanical action of the air, and cooking the food without destroying the compound of natural material or the character of
70 the atoms, the true object of food preparation.

In the course of food preparation mentioned, in which the object is to break the cells and tissues, and to soften the fiber, when properly carried out, renders the food more healthy,
80 and to this extent the oven may be said to be sanitary.

For the purpose of more effectually accomplishing the ends pointed out, currents of air are established, the effectiveness of which are
85 in proportion to the rapidity of the currents. A hot current of low temperature will thus crisp and singe (really break up cellulose tissue) where a stagnant atmosphere will produce no effect, even at a much higher temperature, which currents are diffused throughout every part of the oven by means heretofore specified and to be hereinafter particularly described and claimed. The currents
90 of air so produced also seem to exert an electrical effect in the oven, which I attribute to the movement and heated application to the oven, as there is an intensity of action not otherwise accounted for, all of which enables me to produce better food and more of it at
100 a less cost for fuel than can be obtained otherwise.

Referring to the accompanying drawings, Figure 1 is a horizontal section through an

oven and stove constructed in accordance with my invention. Fig. 2 is a section on the line xx , Fig. 1, looking toward the front of the stove; Fig. 3, a section on the line yy , Fig. 1, looking toward the back of the stove. Fig. 4 is a perspective view of the back end of the oven with the top and portions of the side walls broken away to show clearly the construction of the bottom and vapor-pipes. Fig. 5 is a horizontal section of a stove provided with double ventilating-flues. Fig. 6 is a transverse section of the same, looking toward the front. Fig. 7 is a section of a modified form of back for the fire-pot. Figs. 8 and 9 are sectional views on lines vv and ww , Fig. 5, showing the air and ventilating flues in vertical section.

Similar letters of reference in all the figures indicate the same parts.

The letter A indicates the fire-pot constructed in the ordinary manner, save at the rear side, where a cast-iron section a is preferably inserted, which section forms the front wall of the air flue or flues B, the latter being open to the external air and discharging into the oven through an opening or openings C, preferably located some distance above the bottom of the oven. The rear wall for the fire-pot is preferably formed by a relatively thin plate provided with depressions, in which are located sections of fire-brick a^2 , and having flues a^3 at the back through which the air may pass in contact with the thin sections, or separate alternate sections of iron and fire-brick may be used. Said sections of fire-brick prevent all danger of the intermediate sections being burned out. This construction will be readily understood by referring to Fig. 7; and it will be understood that with this particular construction of fire-pot back it is not essential that the air be taken into the oven, as herein described; but the air passing through the flues may be utilized in any ordinary and well-known manner.

In Fig. 1 it will be seen that two air-passages are provided, one at each side, while in Fig. 5 a single air-flue is shown at the center, and between or at each side of these air-flues are located flues D, which I term "ventilating-flues." Said flues D communicate at the upper ends with a hollow bridge or cross-piece E, provided at the rear side with openings e into the smoke-flue slightly in rear of the fire-pot, and at the lower end open into the oven, preferably at the bottom of the same, through the medium of flues and passages to be now described.

The interior of the oven, and more particularly the bottom thereof, is corrugated or provided with series of depressions or passages F, which materially increase the superficial area or radiating-surface, and thus increase the heat in the oven. Communicating with these corrugations or passages are transverse flues G, opening into and forming extensions of the ventilating-flues D, and which are provided at the rear end with a section having

a perforated cover f . Said flues preferably communicate with the ends of the corrugations either at the center, as shown in Fig. 1, or at the side, as shown in Fig. 5. This construction of oven-interior, it will be seen at a glance, enables pans or other cooking utensils to be placed in the same in any position without in the least interfering with the ventilation, as the superheated air will pass into the oven and settle down over and all around the articles being cooked, thus greatly facilitating the rapidity of the process, as hereinbefore pointed out, owing to the employment of a circulating body of heated air, which will cook much more perfectly and rapidly than a stagnant body of air at the same temperature, or will enable the cooking process to be carried on when the oven is at a temperature below that which would be required by the latter.

The air-flue B, through which the air enters the oven, is preferably of large sectional area, with a comparatively thin front wall, Fig. 7, adjacent to the fire-pot, thus enabling a very large body of air to be heated to a high degree and discharged into the oven at the top; and in order to more perfectly regulate and govern the discharge of air without causing the same to pass into the oven in a single stream or body, whereby the temperature at different points would be made to vary, I provide dampers H, having foraminous sections h , through which a lesser quantity of air can pass and at the same time be equally disseminated throughout the oven, and solid sections h' for shutting off the air entirely, when desired.

In Fig. 2 the openings into the air-flue are necessarily somewhat widely separated, and in this instance the dampers are united at top and bottom to form a single slide. In Fig. 1 but a single damper need be employed, if desired; but a more perfect regulation is attained by the employment of two openings and independent upper and lower dampers, whereby the air may be discharged into the oven at different heights.

In connection with my present oven I propose to employ a vapor-generator which will discharge more or less vapor into the oven to increase the density of the air therein and enable a higher temperature to be maintained, and also to prevent the undue drying of the articles being cooked, as well as to enable a vapor-laden air to be discharged into the flame-passage immediately over or in rear of the fire-pot to assist in complete combustion of the gases and products from the fuel; or, if desired, said vapor-generator may be employed to steam some articles of food.

The vapor-generator in the preferred construction consists, preferably, of pipes or chambers K, lying adjacent the rear end of the oven and communicating on the outside with a water supply or reservoir L, with a filling-orifice at the upper end. The pipes or chambers and the reservoir are firmly united

and mounted in bearings in the side walls of the oven, thus adapting them to be adjusted to project the pipes or chambers a greater or less distance into the oven, as occasion may require. The upper pipe or chamber is perforated or provided with an escape orifice or orifices for the steam, which is generated within the chambers and superheated as it enters the oven, thereby becoming an invisible vapor which permeates the atmosphere throughout the oven, producing somewhat the effect of perfect steaming without carrying it to such a degree as to render the condition of the air within the oven such as to unfit it for ordinary cooking processes, but, on the contrary, producing an effect highly beneficial to such processes and enabling a much higher degree of temperature to be secured and maintained than is usual in the ordinary cooking-stove now in use.

The ventilation and circulation of the air throughout every part of the oven prevents the condensation of the vapor within the oven, and carries the same through the ventilating-flue and discharges it in the most advantageous position to act as an adjunct to the fuel, as before mentioned.

Having thus described my invention, what I claim as new is—

1. In a stove, the combination, with the smoke-flue, of the fire-pot having the side formed by alternate sections of relatively thick fire-brick and thin metal portions in contact with each other, with air-flues in rear of the thin metal portions, substantially as described.

2. In a stove, the combination, with the smoke-flue, of the fire-pot having the side formed by the recessed metal plate with fire-brick in the recesses facing the fire-pot, and the air-flues between the fire-brick sections and in rear of the metal plate, substantially as described.

3. In a cooking-stove, the combination, with the fire-pot, smoke-flue, and oven having the corrugated bottom plate, of ventilating-flues communicating with said corrugations, substantially as described.

4. In a cooking-stove, the combination, with the fire-pot, smoke-flue, and oven having the corrugated bottom plate, of ventilating-flues communicating with the ends of said corrugations, substantially as described.

5. In a cooking-stove, the combination, with the oven having the corrugated bottom plate, of the flue communicating with the ends of said corrugations and discharging outside of the oven, and the air-heating flue passing in proximity to the fire-pot and discharging into the oven above the bottom, substantially as described.

6. In a cooking-stove, the combination, with the fire-pot and oven having the corrugated bottom, of the ventilating-flue communicating with said corrugations and having the foraminous section, substantially as described.

7. In a cooking-stove, the combination, with

the fire-pot, smoke-flue, and oven having the transverse corrugations, of the longitudinal ventilating-flue communicating with said corrugations and discharging outside of the oven, substantially as described.

8. In a cooking-stove, the combination, with the oven having the transversely-corrugated bottom, of the longitudinal ventilating-flue communicating with said corrugations, and the transverse section of flue having the foraminous cover, substantially as described.

9. In a cooking-stove, the combination, with the oven having the transversely-corrugated bottom, of the longitudinal ventilating-flue communicating with said corrugations, and the transverse section of flue at the rear end having the foraminous cover, substantially as described.

10. In a cooking-stove, the combination, with the fire-pot, smoke-flue, and oven, having the transversely-corrugated bottom, of the longitudinal ventilating-flues at both sides communicating with the ends of said corrugations, substantially as described.

11. In a cooking-stove, the combination, with the fire-pot, oven, and the flue open to the external air passing in proximity to the fire-pot and discharging into the oven, of the hollow cross-piece and the ventilating-flue leading from the bottom of the oven into the cross-piece, substantially as described.

12. In a cooking-stove, the combination, with the fire-pot, oven, and the flue open to the external air passing in proximity to the fire-pot and discharging into the oven, of the hollow cross-piece with the openings into the smoke-flue, and the ventilating-flue leading from the bottom of the oven into the cross-piece, substantially as described.

13. In a cooking-stove, the combination, with the fire-pot, oven, and the flue open to the external air passing in proximity to the fire-pot and discharging into the oven, of the hollow cross-piece, the vertical flue leading from the oven into said cross-piece, and the longitudinal flue within the oven communicating with said vertical flue, substantially as described.

14. In a cooking-stove, the combination, with the fire-pot, the oven having the corrugated bottom, and the flue open to the external air passing in proximity to the fire-pot and discharging into the oven, of the hollow cross-piece, the vertical flues leading from the oven into said cross-piece, and the longitudinal flues opening into the vertical flue and communicating with said corrugations, substantially as described.

15. In a cooking-stove, the combination, with the fire-pot and oven, of the vertical central flue having the thin wall next the fire-pot and opening into the oven at the center, and the flues opening into the oven at each side of said central flue and discharging into the hollow cross-piece, substantially as described.

16. In a cooking-stove, the combination,

with the fire-pot, the oven having the corrugated bottom, and the flue open to the external air passing in proximity to the fire-pot and discharging into the oven, of the hollow cross-piece, the vertical flues leading into said cross-piece, and the longitudinal flues communicating with said vertical flue and also communicating with the ends of the corrugations in the bottom of the oven, substantially as described.

17. In a cooking-stove, the combination, with the oven, of the air-flue having the opening into the oven, and the damper for covering said opening having the foraminous and solid sections, substantially as described.

18. In a cooking-stove, the combination, with the oven and fire-pot, of the flue open to the external air passing in proximity to the fire-pot and discharging into the oven, and the dampers for said opening having the solid and foraminous sections, substantially as described.

19. In a cooking-stove, the combination, with the oven and ventilating-flue for discharging air therefrom, of the air-flue for the inlet of air having the openings at top and bottom of the oven, and dampers for regulating said openings, substantially as described.

20. In a cooking-stove, the combination, with the oven and ventilating-flue opening at the top of the oven for discharging air therefrom, of the air-flue for the inlet of air having the openings at top and bottom of the oven, and dampers for regulating said openings independently, substantially as described.

21. In a cooking-stove, the combination,

with the oven, of the adjustable vapor-discharge within the oven, substantially as described.

22. In a cooking-stove, the combination, with the oven having the ventilating-flues therein opening into the smoke-flue, of the vapor-discharge within the oven, substantially as described.

23. In a cooking-stove, the combination, with the oven having the ventilating-flues opening into the smoke-flue, and regulating-dampers, of the adjustable vapor-discharge within the oven, substantially as described.

24. In a cooking-stove, the combination, with the oven, of the water-tank having the tube at the bottom and the perforated tube at the top, substantially as described.

25. In a cooking-stove, the combination, with the oven, of the water-tank outside of the oven, and the adjustable tubes projecting into the oven, substantially as described.

26. In a cooking-stove, the combination, with the oven, of the water-tank outside of the same having the tube at the bottom projecting into the oven, and the perforated tube at the top also projecting into the oven, substantially as described.

27. In a cooking-stove, the combination, with the oven having the ventilating-flues, of the water-tank communicating with the oven, substantially as described.

JOHN A. PRICE.

Witnesses:

A. C. FULLER,
J. A. LANSING.