

(No Model.)

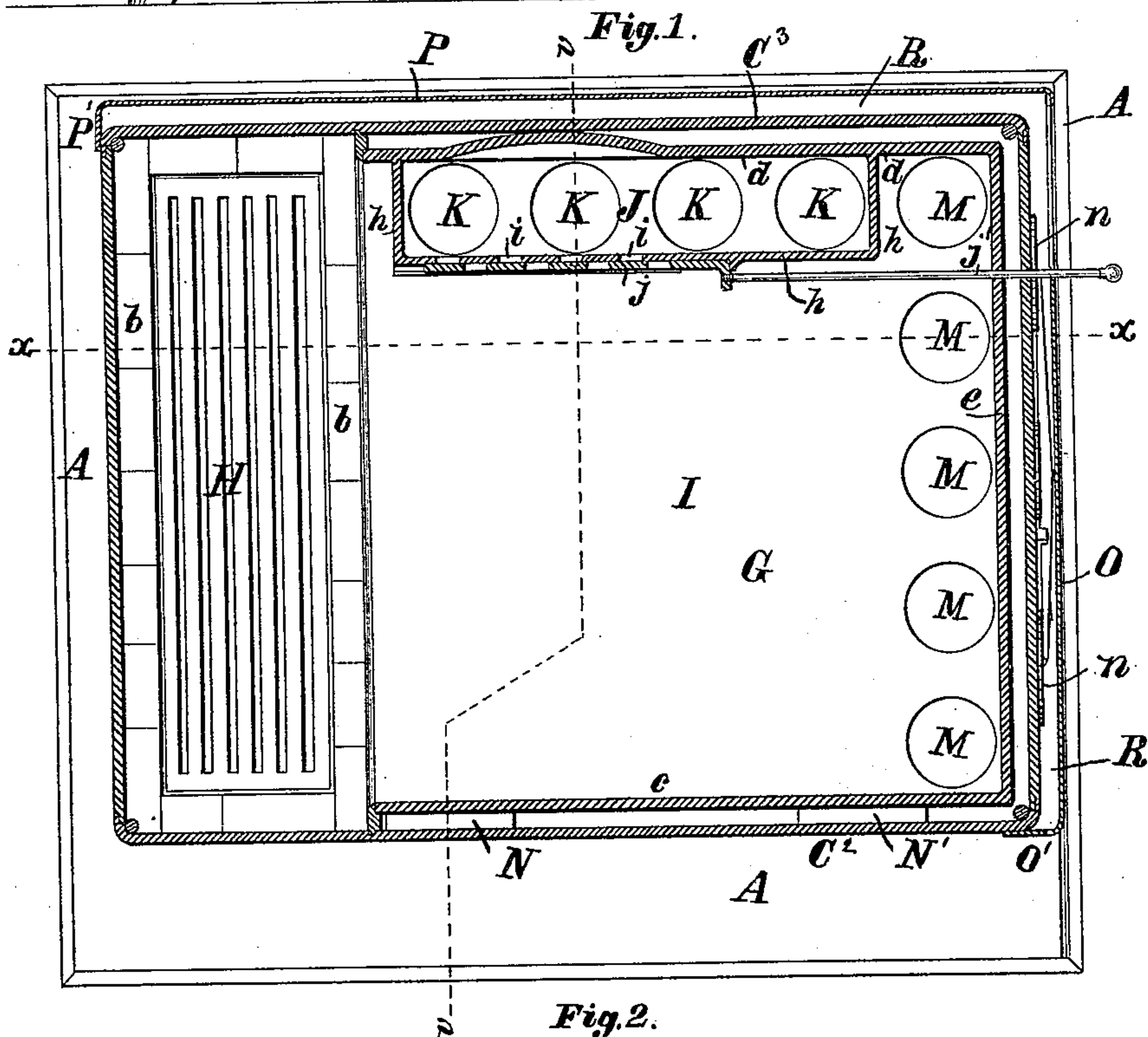
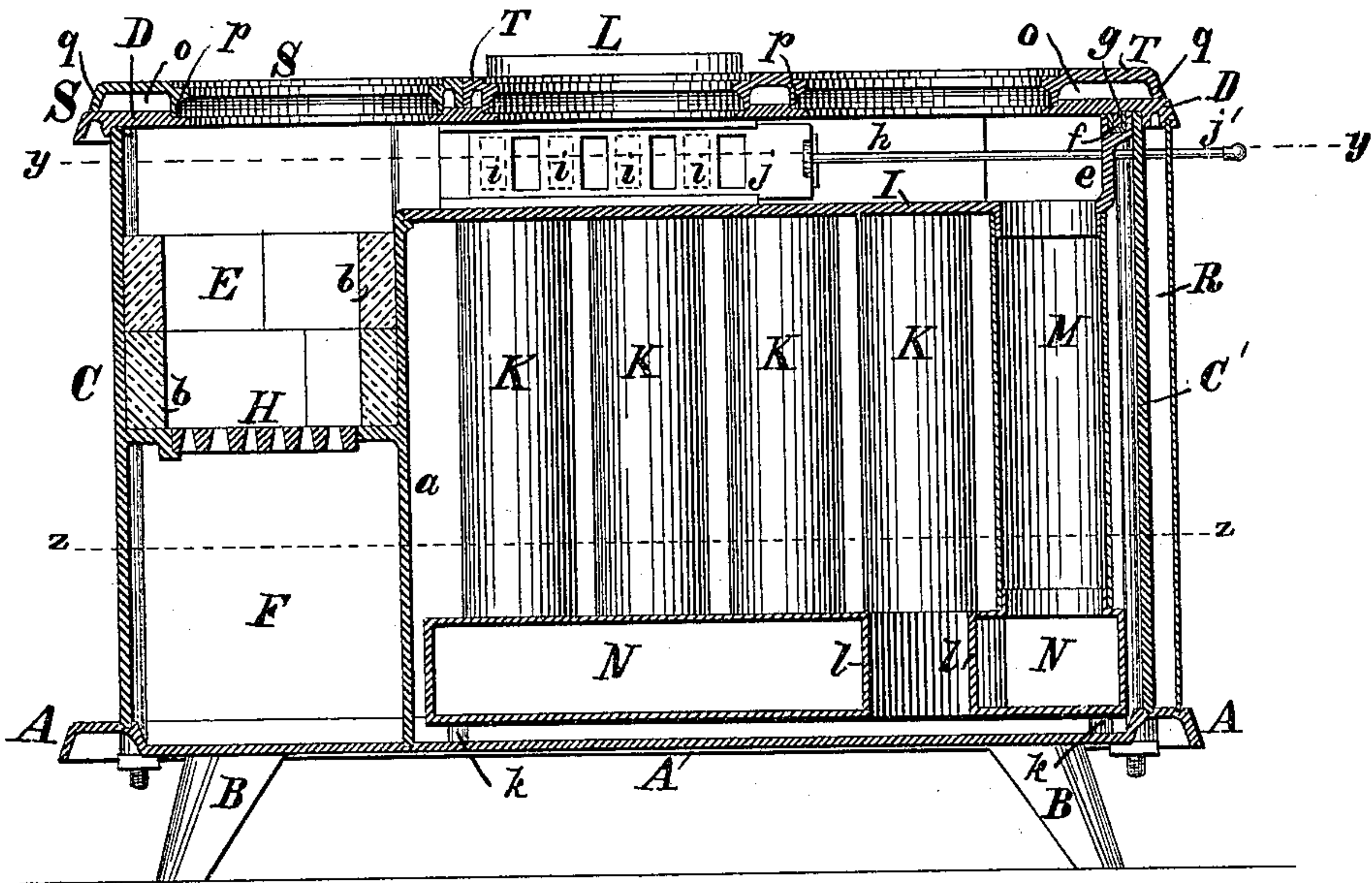
3 Sheets—Sheet 1.

E. D. NORCROSS.

Cooking Stove and Range.

No. 230,889.

Patented Aug. 10, 1880.



Witnesses:

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E. E. Chandler.

Inventor:

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(No Model.)

3 Sheets—Sheet 2.

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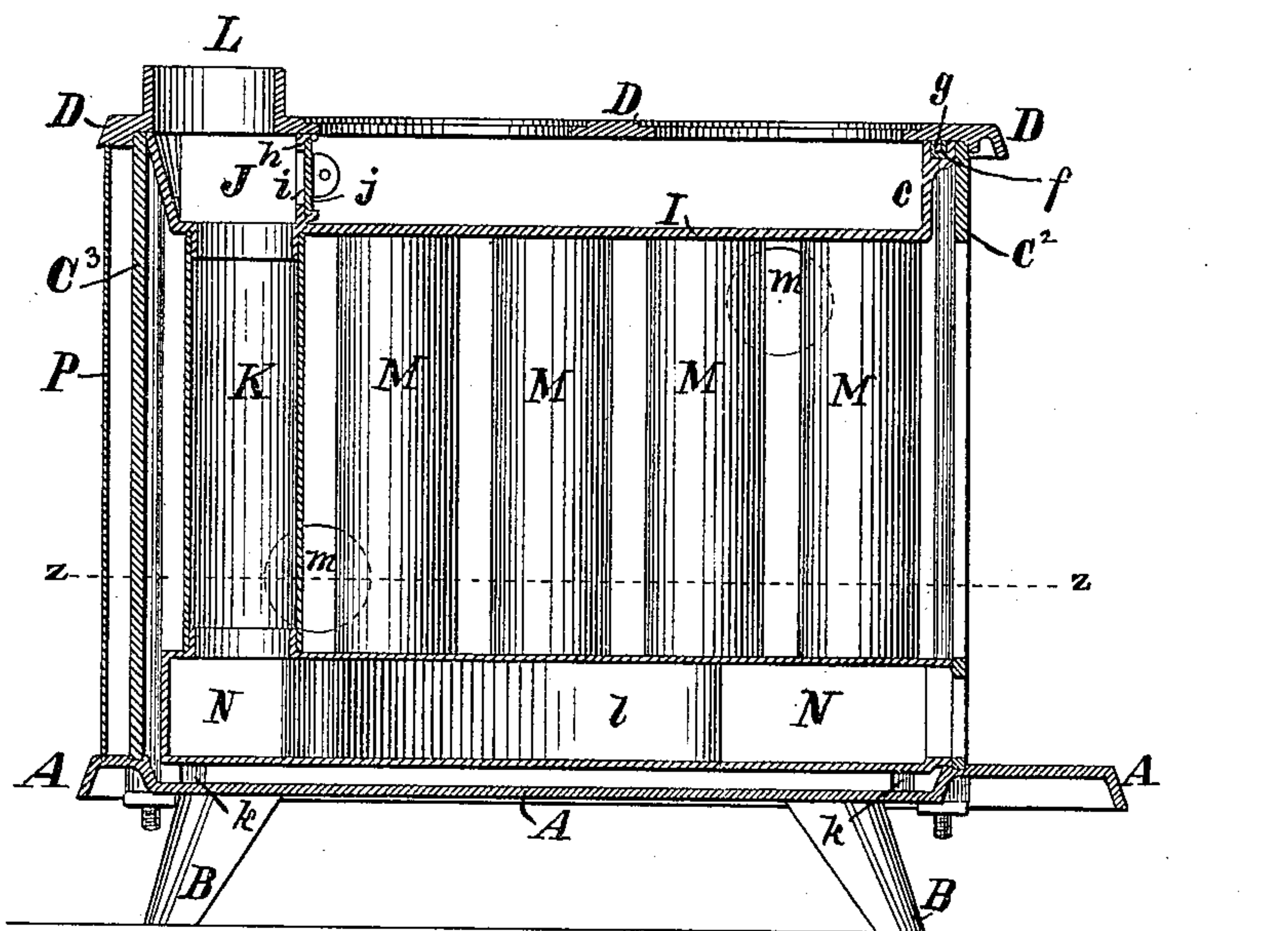


Fig. 4.

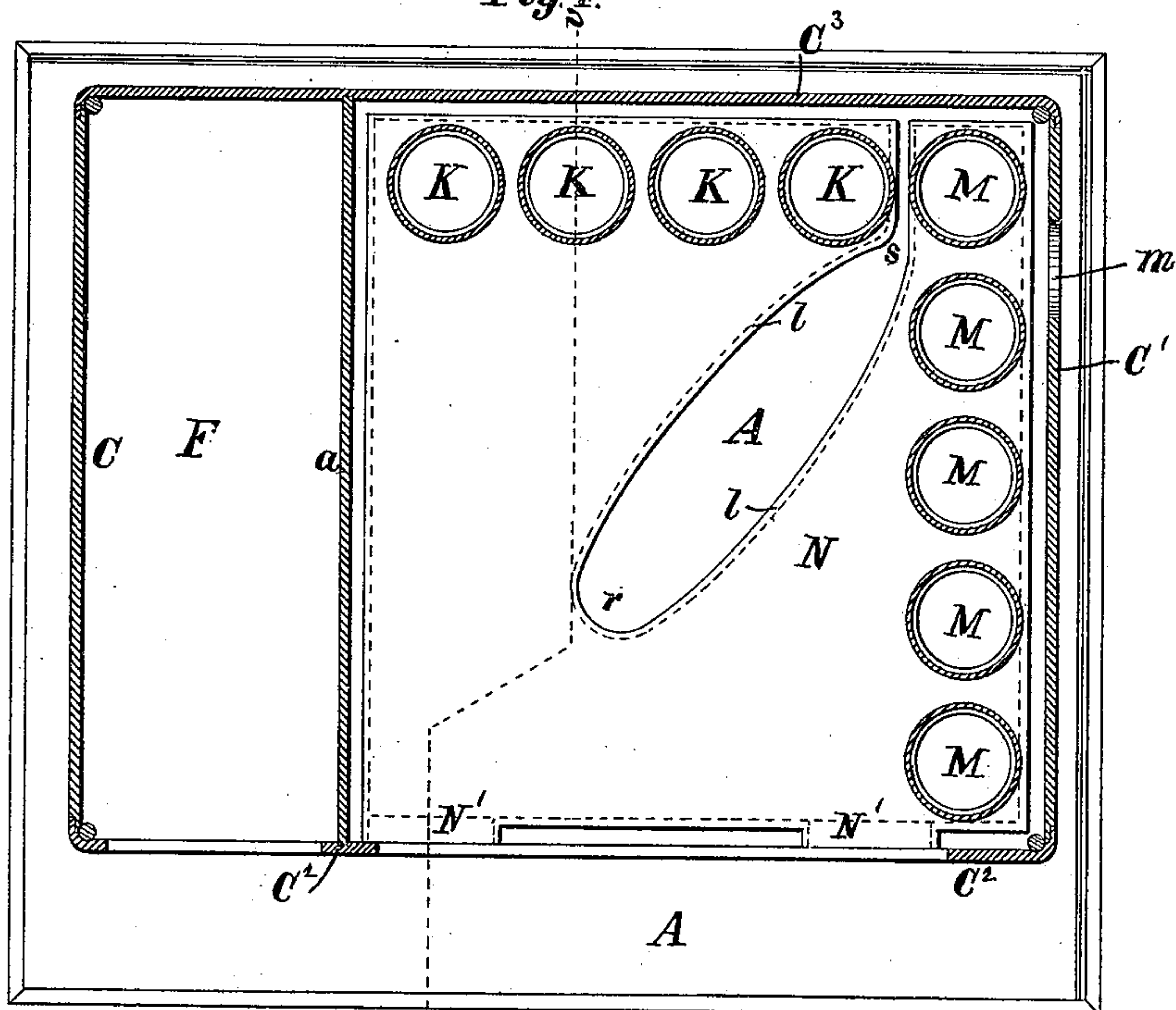


Fig. 3.

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(No Model.)

3 Sheets—Sheet 3.

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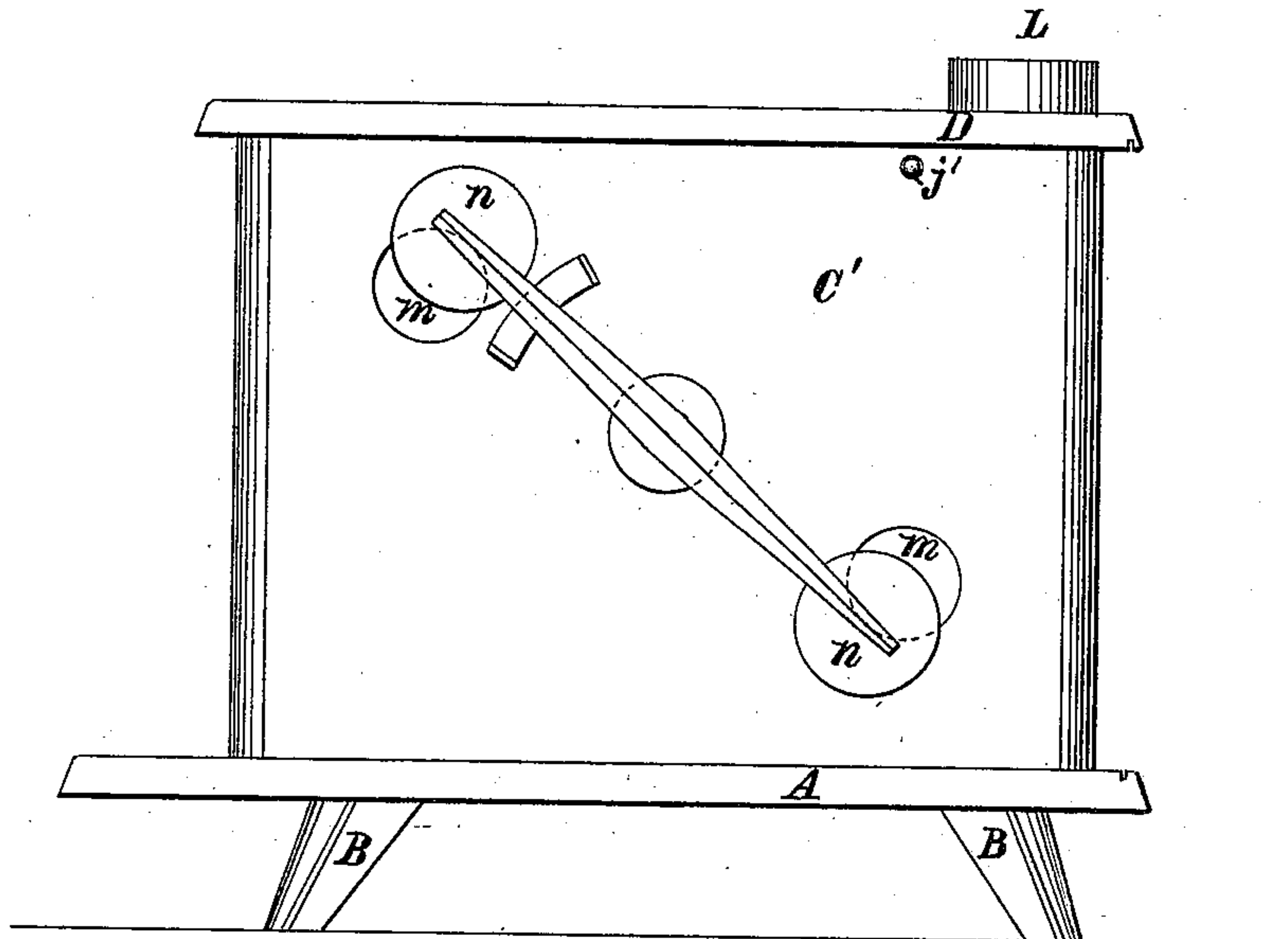


Fig. 6.

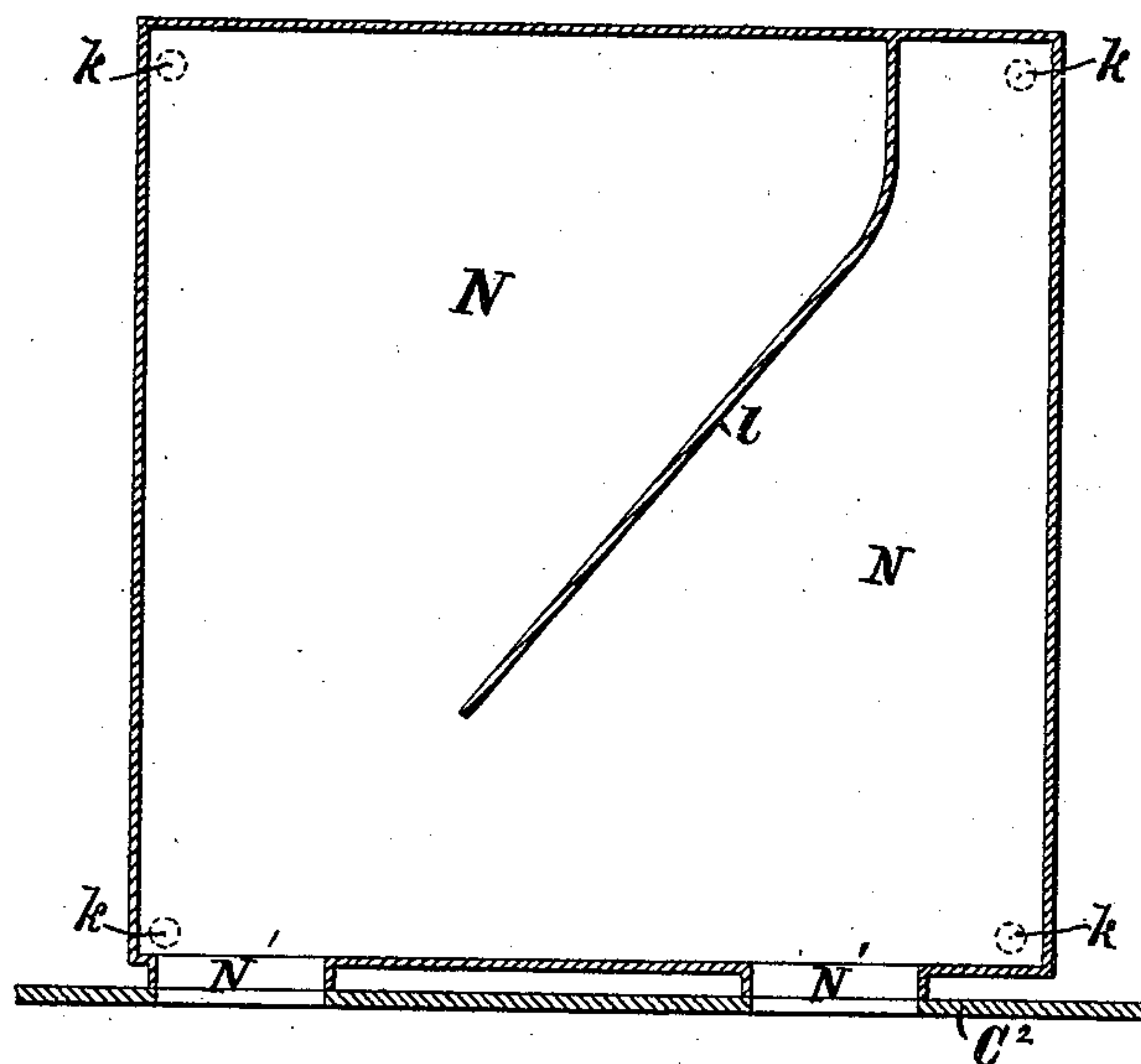


Fig. 5.

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UNITED STATES PATENT OFFICE.

EDMUND D. NORCROSS, OF EVERETT, MASSACHUSETTS.

COOKING STOVE AND RANGE.

SPECIFICATION forming part of Letters Patent No. 230,889, dated August 10, 1880.

Application filed April 24, 1880. (No model.)

To all whom it may concern:

Be it known that I, EDMUND D. NORCROSS, of Everett, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Cooking Stoves and Ranges, of which the following, taken in connection with the accompanying drawings, is a specification.

My invention relates to a novel construction and arrangement of the plates and flues of cooking stoves and ranges, whereby the oven is made much more effective for baking purposes than stove-ovens as heretofore constructed, and to means employed to vary the radiating power of the stove for the purpose of heating the room; and it consists, first, in constructing the top oven-plate with upwardly-projecting sides and rear end reaching to and connected with the top plate of the stove along lines some little distance inside of the outer side and end plates of the stove in such a manner that the space between said upwardly-projecting sides of said oven-plate and the outer plates of the stove shall be in direct communication with or form a part of the oven.

It further consists in a series of descending flues or pipes and a series of ascending flues or pipes passing directly through the oven, and communicating at their lower ends with the interior of a horizontal flue forming the bottom of the oven, and raised above the bottom plate of the stove, and made of such a size as to leave a space between the edges of said flue and the side and end plates of the oven in such a manner that the top, bottom, and edges of said flue shall be heating-surface, which, with the entire peripheral area of the descending and ascending flues, radiates into the oven, whereby the heating capacity of the oven is greatly increased without increasing the amount of fuel burned.

It further consists in a horizontal flue made rectangular in general outline, but partially divided obliquely by an opening from top to bottom, or a partition, so as to compel the products of combustion passing through said flue to fill all parts and heat it equally, said flue being raised above the stove-bottom and being made of such dimensions that a space is formed all around said flue between its edge and the vertical outer walls of the stove on

three sides and between it and the wall of the ash-pit upon the other side, which space communicates with the spaces above and below said flue in such a manner that the entire exterior area of said flue, top, bottom, and vertical edges shall radiate heat into the oven.

It further consists in a cook-stove provided with an oven which extends from the wall of the fire-box and ash-pit to the outer end wall of the stove in one direction and from the front to the rear vertical outside walls of the stove in another direction, in combination with a series of descending and ascending flues, which pass through said oven in such a manner that their entire peripheral areas shall radiate heat into the oven.

It further consists in an oven-top plate provided with two sides and one end projecting upward therefrom at right angles, or nearly so, to the main body of said plate, and having formed in the upper edges of said upright or vertical portions channels or grooves, in combination with the stove-top provided with downwardly-projecting ribs adapted to fit into said grooves, and a plastic packing surrounding said ribs and filling said grooves to make a smoke-tight joint.

It further consists in the combination, with an oven extending to the outer vertical walls of the stove, of one or more openings cut through one of said walls and a damper or dampers adapted to close said openings independently of the oven-doors as a means of regulating the heat in the oven.

It further consists in the combination, with the top plate of a cooking-stove having openings to receive pots, kettles, and other cooking utensils, of a supplementary detachable top plate provided with corresponding holes surrounded by downwardly-projecting annular ribs adapted to rest upon the permanent stove-top around the openings therein, said supplementary top being also provided with a downwardly-projecting rib or lip around its outer edges fitted to rest upon said permanent top plate in such a manner that a dead-air chamber will be formed between said two top plates as a means of retarding radiation of heat into the room from the stove-top.

It further consists in the combination, with the permanent top plate of a cooking-stove, of

a removable supplementary top plate, constructed as above described, but made in two pieces, either of which may be removed without disturbing the other whenever it may for any reason be desirable to do so.

Figure 1 of the drawings is a vertical section through the fire-pot and oven of a stove embodying my improvements, on line *x x* on Fig. 2. Fig. 2 is a horizontal section on line *y y* on Fig. 1. Fig. 3 is a horizontal section on line *z z*, Figs. 1 and 4. Fig. 4 is a vertical section on line *v v* on Figs. 2 and 3. Fig. 5 is a horizontal section of the chambered oven-bottom or horizontal smoke-flue, illustrating a slightly modified form of said flue; and Fig. 6 is an elevation of the end of the stove opposite to the fire-box, with the sliding supplementary plate removed.

A is the base-plate of the stove, supported upon the legs B B. C, C', C², and C³ are the permanent vertical outer walls of the body of the stove, and D is the permanent top plate, provided with the usual openings to receive pots, kettles, or other utensils, all fitted and secured together in a well-known manner.

E is the fire-pot, and F the ash-pit, separated from the oven G by the metal plate *a* and the usual fire-brick *b*, and from each other by the grate H, all constructed and arranged in a well-known manner.

I is the top plate of the oven, extending from the top edge of the plate *a* toward the opposite end of the stove, but not long enough to reach it, and made of a width somewhat less than the width of the stove between the front and rear plates, C² and C³, and having three upwardly-projecting sides, *c*, *d*, and *e*, which extend upward to the under surface of the top plate, D, and have formed in their upper edges channels or grooves *f*, into which project the ribs *g*, cast upon the under side of the plate D, the joint being packed with clay or other non-combustible packing to make a smoke-tight joint.

The oven-plate has also formed thereon the partition *h*, extending upward therefrom to the under side of the top plate, D, and inclosing a rectangular space, J, into which the upper ends of the ascending flues or pipes K K open and from which the smoke-pipe L issues, as shown.

The long side of the partition *h* is provided with a series of openings, *i*, which may be closed by the damper-slide *j*, when desired, through the medium of the rod *j'*, said openings being opened when it is desired to start a fire quickly and closed when it is desired to utilize the products of combustion to heat the oven.

M M are a series of descending flues or pipes, opening at their upper ends through the top oven-plate, I, inside of the vertical side *e*, and their lower ends open into the horizontal flue or chambered oven-bottom N upon that side of said flue farthest from the ash-pit F.

The oven G extends from the plate *a* to plate C' in one direction, and from plate C² to

plate C³ in the other direction, and the pipes K K and M M pass through the oven-space to reach the flue N, as shown.

The chambered oven-bottom N is made rectangular in general outline, but of somewhat less length and width than the oven-space, so that there is a space all around it between it and the plates C', C², C³, and *a*, as shown, and said flue is supported in a position with its under side some distance above the upper surface of the base-plate A by the legs *k k* in such a manner that the bottom and sides as well as the top of said flue become heating-surface, which radiates directly into the oven, as does also the whole peripheral area of the pipes K and M, thereby greatly increasing the baking capacity of the oven without increasing the amount of fuel used.

The vertical sides *c*, *d*, and *e* of the oven-plate I also radiate heat into the oven, as well as the bottom of the plate I itself, adding still more to the baking capacity of the oven.

With the descending flues M entering the flue N along one side or near one edge, and the flues K entering it along or near another edge, which is at right angles to that in which M M are set, it becomes necessary to counteract the natural tendency of the products of combustion to pass by the shortest route from the flues M to the flues K, and to this end I place in the flue N a deflecting-partition, *l*, extending from near one corner obliquely toward the opposite corner, whereby the products of combustion are compelled to pass around the inner end of said deflector, and thus come in contact with all parts of the flue N and heat it to substantially an even temperature.

In some cases, in order to still more increase the radiating-surface into the oven, I form said deflector in the form of a double wall and cut openings through the upper and lower plates of the flue N, as shown at *r* in Fig. 4.

The flue N is also provided with two short rectangular pipes, N', projecting horizontally from its front side, to match openings made in the plate C², through which the flue may be cleaned.

The vertical plate C' has cut through it one or more openings, *m*, by means of which and the damper *n* the heat in the oven may be regulated to some extent by allowing more or less of the heat to escape into the room when the oven becomes too hot.

O and P are two supplementary vertical plates, each provided at one end with a flange or lip, O' or P', said plates being fitted to slide endwise in grooves formed in the base-plate A and top plate, D, at a little distance from the plates C' and C³, so that when said plates O and P are in position a dead-air space, R, is formed between said plates and the permanent walls of the stove, whereby the amount of heat radiated into the room is very much lessened.

S and T are two supplementary top plates, arranged to rest upon the permanent top plate, D, and form between it and them dead-air

spaces *o* to retard radiation from the top of the stove, said plates being provided with holes corresponding to those in the permanent top to receive the stoveware, surrounded
 5 by downwardly-projecting annular ribs *p*, which rest upon and are supported by the rabbets around the openings in the permanent top *D*, said supplementary top plates, *S* and *T*, also being provided with downwardly-projecting ribs *q*, which rest upon the permanent top plate and complete the inclosure of the air-spaces *o*.

The piece *S* covers that portion of the stove-top directly over the fire-pot, and may be removed at will without disturbing the part *T* whenever it is desired to heat a boiler or other kettle quickly without causing a great radiation of heat into the room—as, for instance, in hot weather.

20 What I claim as new, and desire to secure by Letters Patent of the United States, is—

1. In a cooking-stove, the top oven-plate, *I*, provided with the vertical sides *c*, *d*, and *e*, reaching to and connected with the top plate, 25 *D*, along lines inside of the vertical outer walls of the stove, substantially as and for the purposes described.

2. In a cooking-stove, the combination of a series of descending pipes or flues and a series
 30 of ascending flues or pipes passing directly through the oven and communicating at their lower ends with the interior of a horizontal flue or chambered oven-bottom raised above the bottom plate of the stove, and made, as described, to leave a space all around it, connecting the space beneath said flue with the space above the same, substantially as and for the purposes described.

3. In a cooking-stove, a chambered oven
 40 bottom or flue, rectangular in form, having an area in plan somewhat smaller than the area of the bottom of the oven-space, and provided with a deflecting-partition extending obliquely from a point near one corner toward the opposite diagonal corner, said flue being arranged within the oven-space with its under side raised above the base-plate of the stove, substantially as and for the purposes described.

50 4. In a cooking-stove, a chambered oven-bottom or horizontal flue, made substantially rectangular in general outline, but partially divided obliquely by a slit or opening extending from a point near one corner toward the opposite diagonal corner, and supported in the
 55 oven-space with its bottom raised above the surface of the base-plate of the stove, in the manner described, so that the top, bottom, edges, and the vertical walls of said oblique opening shall all radiate heat into the oven-space, as set forth.

5. In a cooking-stove, an oven which ex-

tends from the wall of the fire-pot and ash-pit to the opposite outer vertical wall of the stove in one direction and from the front to the rear 65 outer permanent vertical walls of the stove in another direction, in combination with a series of descending flues and a series of ascending flues or pipes, which pass directly through the oven-space in such positions that their entire peripheral surfaces will radiate heat into the oven-space, substantially as described. 70

6. The combination of the oven-top *I*, provided with the vertical sides *c*, *d*, and *e*, the chambered flue *N*, raised above the base-plate 75 *A*, descending pipes or flues *M*, ascending flues or pipes *K*, and plates *A*, *D*, *a*, *C*, *C'*, *C''*, and *C'''*, all constructed and arranged relative to each other substantially as and for the purposes described. 80

7. The oven-top plate *I*, provided with the vertical sides *c*, *d*, and *e*, having grooves or channels *f* formed in their upper edges, in combination with the top plate, *D*, provided with downwardly-projecting ribs *g*, adapted to fit 85 into said grooves, and a plastic packing filling said grooves around said ribs, substantially as and for the purposes described.

8. In a cooking-stove, the combination of an oven extending from the fire-pot and ash-pit 90 to the opposite permanent vertical wall of the stove, one or more openings cut through said wall, and a pivoted damper or dampers adapted to be adjusted to open or close or partially open or close said openings, substantially as 95 and for the purposes described.

9. In combination with the perforated top plate of a cooking stove or range, a secondary and removable top plate provided with pot-holes corresponding to those in the permanent 100 top, and with downwardly-projecting ribs encircling said pot-holes, and a downwardly-projecting rib around its outer edge, all of said ribs being adapted to rest upon the permanent top plate and to inclose an air-chamber separated from the interior of the stove or range, substantially as and for the purposes described. 105

10. In combination with the perforated top of a cooking-stove, a secondary perforated top 110 made in two pieces, each provided with downwardly projecting ribs around its outer edges and around the perforations or openings, which ribs rest upon the permanent stove-top and inclose air spaces between it and the secondary 115 top, substantially as and for the purposes described.

Executed at Boston, Massachusetts, this 22d day of April, A. D. 1880.

EDMUND D. NORCROSS.

Witnesses:

E. A. HEMMENWAY,
 W. E. LOMBARD.