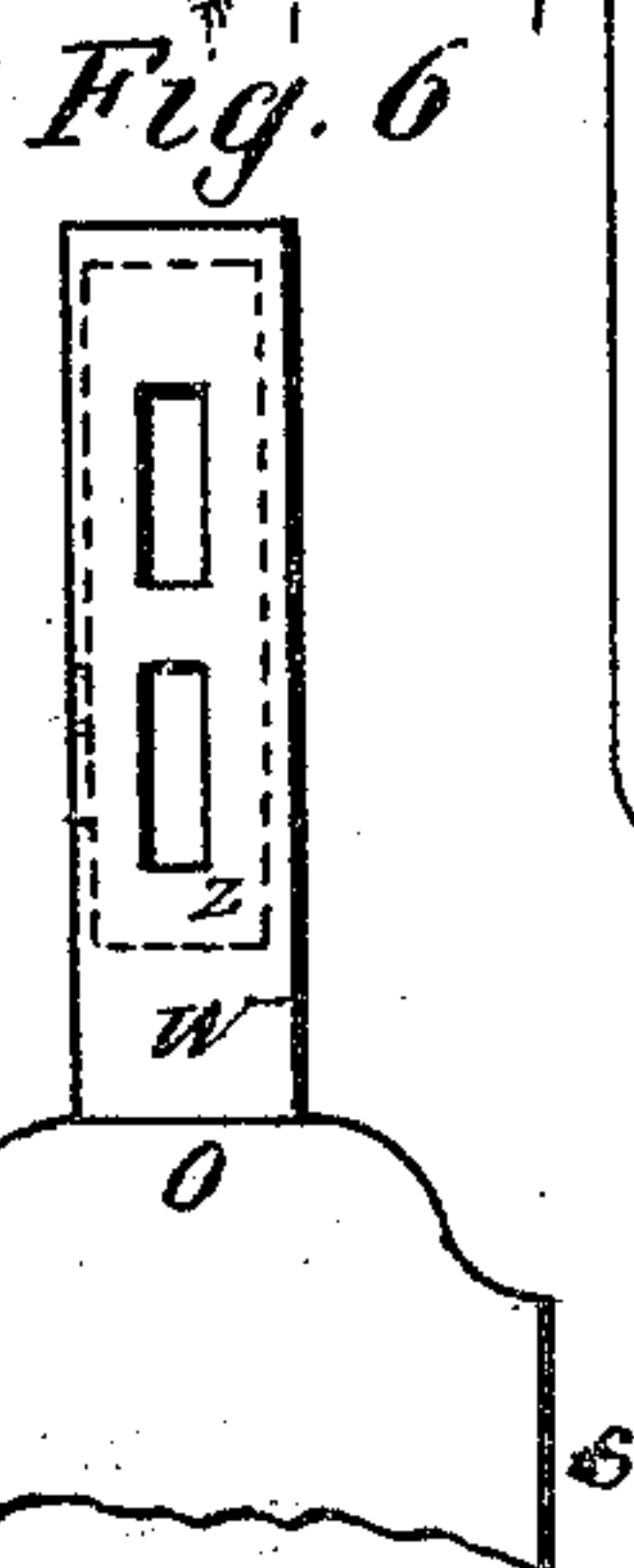
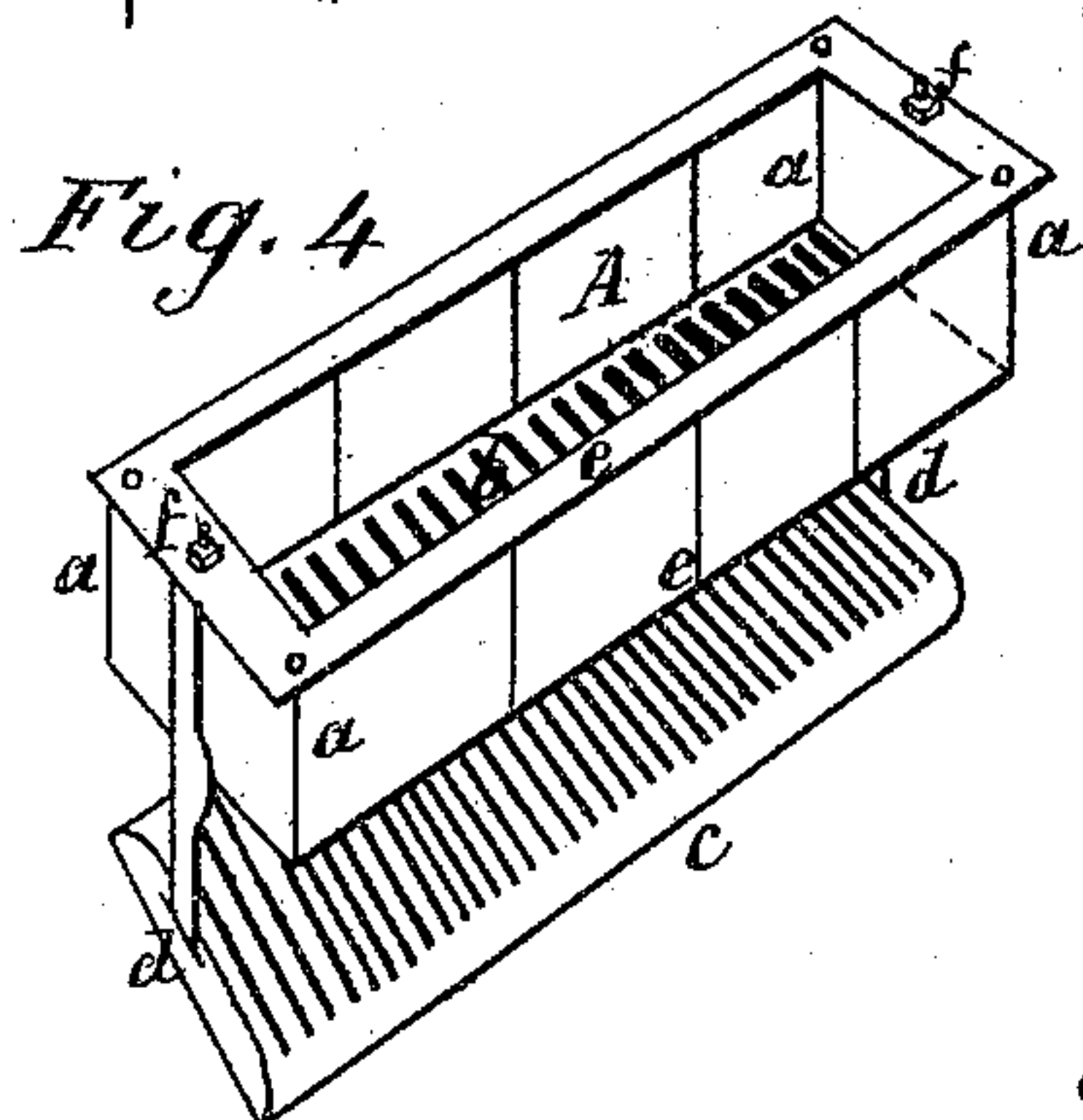
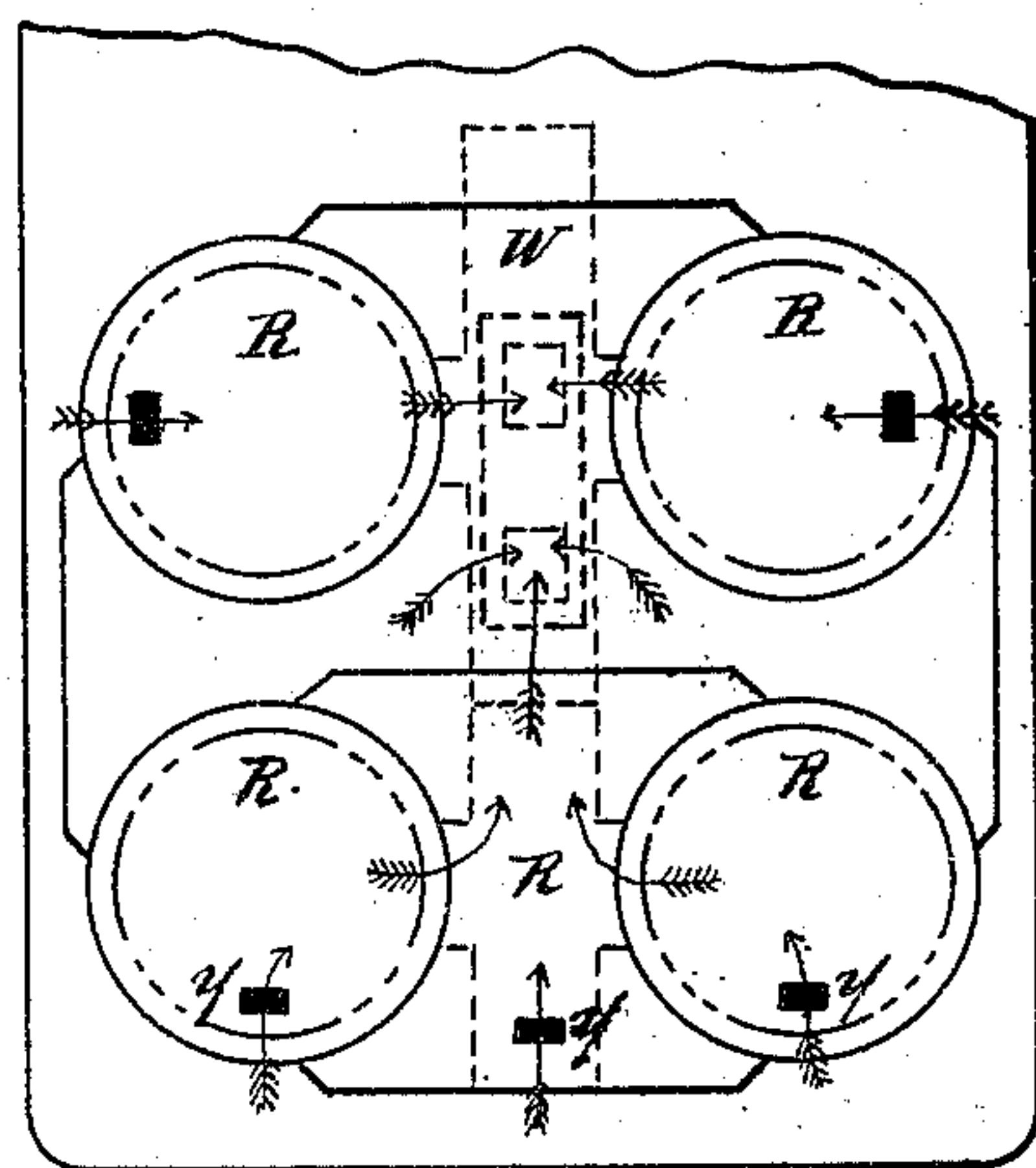
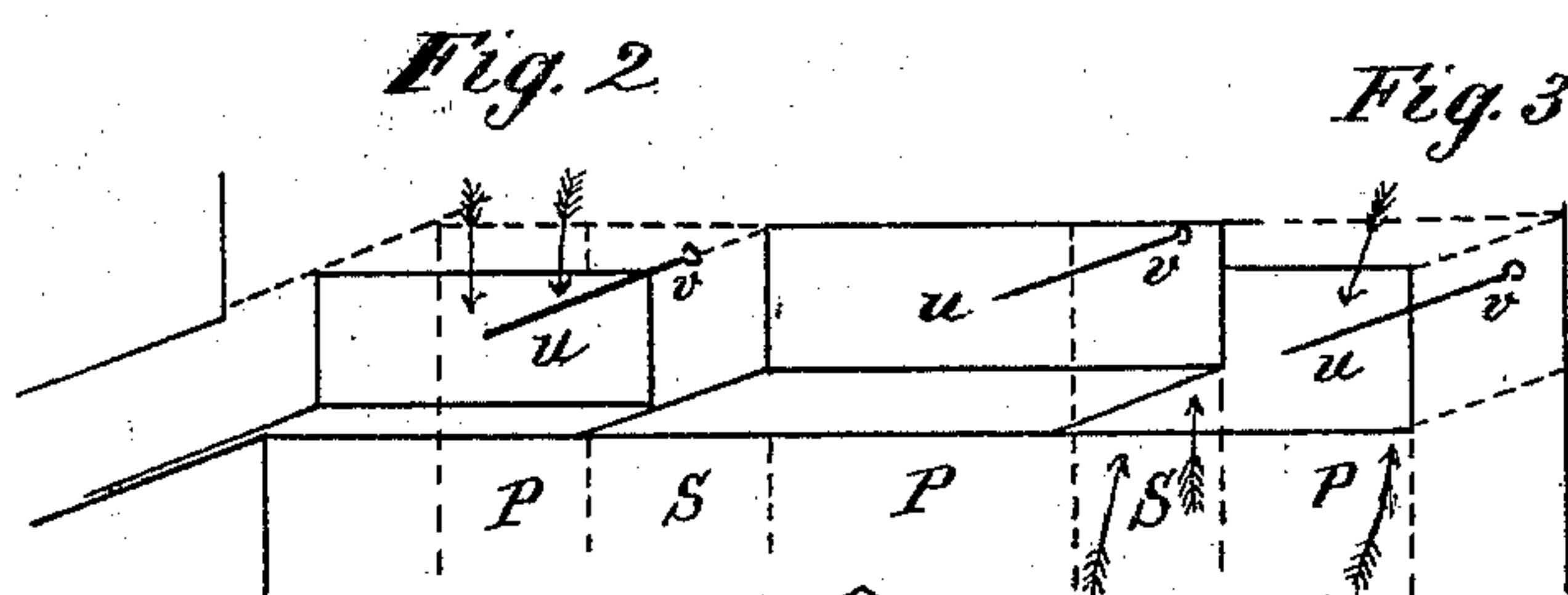
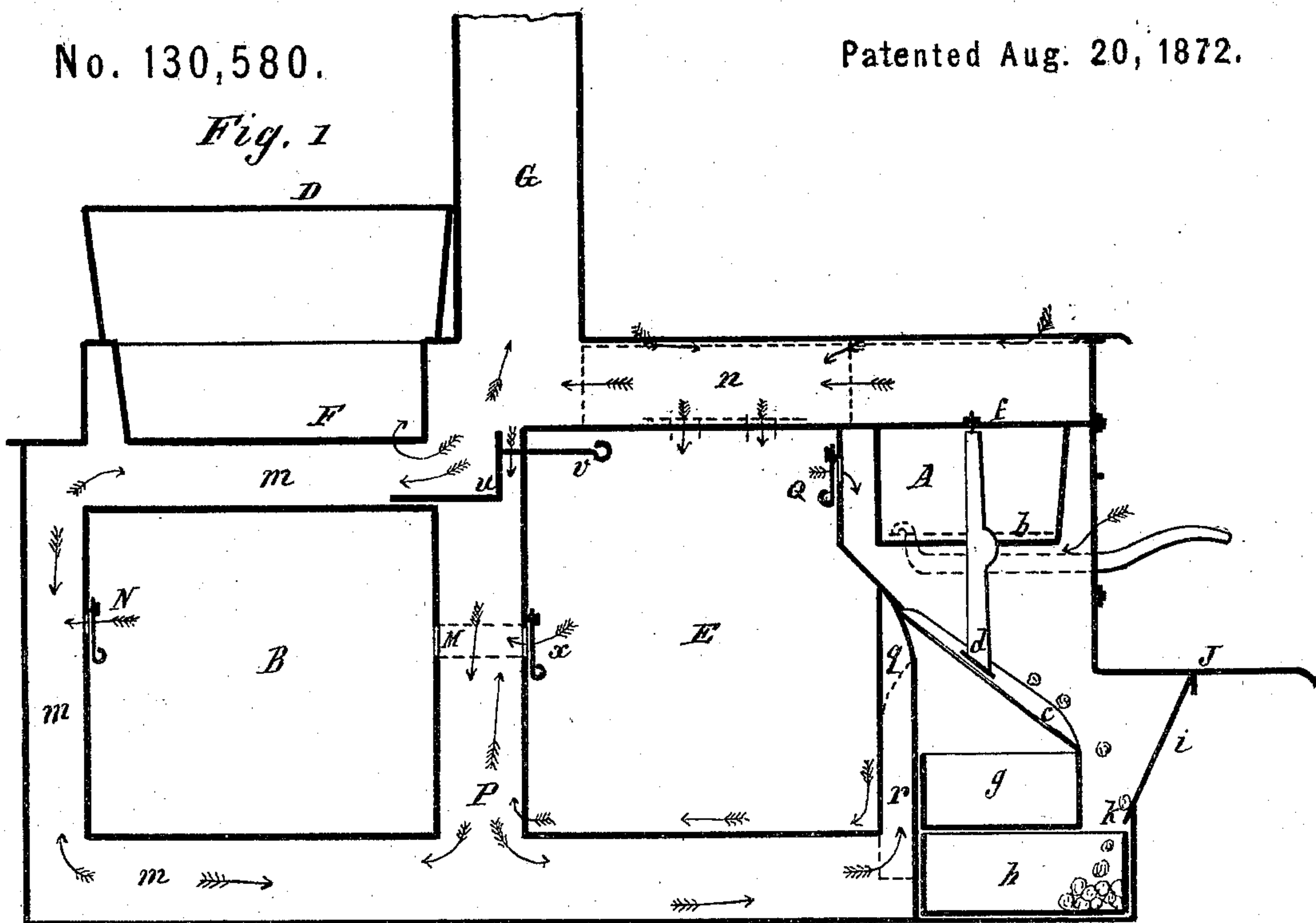


H. INGRAHAM.

Cooking-Stove.

No. 130,580.

Patented Aug. 20, 1872.



Witnesses

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# UNITED STATES PATENT OFFICE.

HANFORD INGRAHAM, OF NAPLES, NEW YORK.

## IMPROVEMENT IN COOKING-STOVES.

Specification forming part of Letters Patent No. 130,580, dated August 20, 1872.

I, HANFORD INGRAHAM, of Naples, in the county of Ontario and State of New York, have invented certain Improvements in Coal Cook-Stoves, of which the following is a specification:

Figure 1 is a side elevation of a stove embodying my invention. Fig. 2 is a perspective view of the flues and dampers. Fig. 3 is a top view of that portion of the stove in front of the pipe, showing also a plan of the hot-air chamber. Fig. 4 is a perspective view of the coal-pot and sifting-grates. Fig. 5 is the lever for working the grates. Fig. 6 is a top view of the hot-air chamber, circular plate, and division-plates.

My invention consists, first, in constructing a coal-pot, A, the sides and ends of which are composed of narrow staves or pieces to prevent them from warping or breaking from the action of heat, and for economy in repairing, and placed in a frame composed of two separate parts, having suitable grooves to receive the ends of the staves, and are fastened together by means of rods *a a a* at each corner. The coal-pot is suspended in the front end of the stove by the top of the frame, which rests on bearings on the plate of the stove and on the front end of the top flue. A grate, *b*, is placed in the bottom of the coal-pot, with gudgeons at the ends resting on the lower part of the frame in suitable circles in which they slide and turn. Below this grate is an inclined sifting-grate, C, with suitable openings for the ashes to pass through, and is suspended on the upper part of the frame of the coal-pot by means of hooks *d d* at the ends, with a screw on the upper end of the hooks, which pass through the holes in the ends of the top of the frame *e* to the coal-pot, and are fastened by nuts *f f* on the ends of the screws, by which means the grate C may be raised or lowered, as desired. A suitable inclination is given to the sifting-grate C for the coals to pass off in front of the ash-pan *g*. The coal-pan *h* is placed below the ash-pan, the front edge extending a little forward of the ash-pan, leaving a space in front of the ash-pan sufficient for the coals that fall from the sifting-grate to pass through, which are thrown back under the ash-pan into the coal-pan by means of the inclined position of the front plate *i* of

the stove below the hearth *j*, which has a short turn in front of the top of the coal-pan, with a projection, *k*, on the turn of the inclined plate, under which the front of the top edge of the coal-pan is placed to prevent the coals from falling through between the coal-pan and the front plate of the stove. For operating the grates a suitable lever, *l*, is made, the ends being turned up, with a notch in the back edge of the end of the lever, which is inserted in a hole through the front of the stove between the doors; the notch in the end of the lever is placed on the inside of the back part of the grate *b*, between the two center ribs of the grate, and by a lateral movement of the lever both grates are shaken. The ends of the gudgeons *f* to the coal-pot grate strike against the hooks *d d*, on which the sifting-grate is suspended, which gives to the sifting-grate the same lateral movement as the grate to the coal-pot has; and, at the same time, by raising moderately the lever, the grate to the coal-pot is tipped back and gradually emptied of its contents on the inclined sifting-grate, which separates the ashes from the coals; the ashes fall through the sifting-grate into the ash-pan, and the coals pass off the inclined sifting-grate, and are thrown back under the ash-pan into the coal-pan instead of in front by means of the inclined position of the front plate *i* below the hearth with the projection *k* on the turn over the top edge of the coal-pan. The inclined front plate *i*, which is hinged to the bottom of the stove, may be let down, and the coals in the coal-pan may be transferred to the coal-pot A, and the ash-pan emptied and replaced without the use of a shovel; which also avoids all inconvenience from coal-dust.

This grate is designed as an improvement on the inclined sifting-grate, without the arrangement for shaking the grate, by which means a less inclination to the sifting-grate is required, which gives sufficient space for the coals to be deposited below the ash-pan instead of in front; by which arrangement the length and cost of the stove are materially reduced.

An extra oven, B, is added to the rear of the stove, with a flue, *m m m*, extending around the top, back, and bottom, with no division-plates, which is also designed as a warming-closet. A double tank, D, is placed on the top



of the extra oven, the bottom F extending downwardly to the level of the bottom of the top flue *n*; the bottom of the tank serves for the top of the flue to the extra oven; the flue *m* extends round and connects with the rear and bottom flues to the front oven E; the rear flues P P P to the front oven serve as the front flues to the extra oven. A circular plate, O, is placed in the top flue *n*, in front of the pipe between the tops of the division-plates S S, to turn the draft each side of the pipe. The rear and bottom flue to the front oven is divided into three parts by means of the two division-plates S S, which extend from the pipe down, thence under the bottom of the front end of the oven E, where an extra flue, *r*, is formed in front of lower part of the oven, which connects with the bottom flues by adding an extra curved plate, *q*, in front of the oven for the purpose of heating the front and lower part of the oven. A slide-damper, *u u u*, is placed at the top of each upright flue P between the ovens, consisting of a plate with a square turn upward near the center, resting on the top of the front of the extra oven B, of sufficient dimensions to open or close either of the flues, horizontal or upright, where they are placed. The handles *v v v* are attached to the upright part of the dampers, and extend across the upright flues and through a hole in the rear plate of the front oven. The center damper *u* is placed at the top of the center flue under the pipe, and the two side dampers are placed at the top of the side flues, in range with each other. By the particular construction and arrangement of the three slide-dampers *u u u* they may be adjusted so as to partially or wholly open or close their respective flues to throw any portion of the heat or draft round each or either of the ovens, or on either side of the hot-air chamber W, which forms a division between the back griddles R R, to bring the heat in close contact with the cooking or boiling utensils on either one side of the stove or one end of the double tank above the extra oven, by which means also each or either of the ovens may be heated for use in baking, or extra oven B may be used as a warming-closet, and the cooking and boiling processes may be successfully carried on on one side of the stove only when the use and heat of the whole stove are not desired. The draft of the stove is controlled by the adjustment of the three above-described dampers *u u u* as follows. First, to heat both ovens at once the center damper *u* should be shoved back against the bottom F of the tank D, and the side dampers *u u* drawn forward against the rear plate of the front oven E, which arrangement closes the draft between the tops of the division-plates *s s*, back of the pipe G, under the tank, and the two-side upright flues between the ovens, which throws the draft over the ends of the extra oven B, and down under through the side flue to the front end of the front oven; thence over the ends of the divi-

sion-plates through the extra flue *r* in front of the oven; thence down into the center flue, and back to the pipe. Second, to heat the extra oven B separately, the center damper *u* should be drawn forward across the center flue and against the rear plate of the front oven, and the side dampers *u u* should be shoved back against the bottom of the tank, which turns the draft down the side upright flues, and back under the extra oven; thence up and over the oven, under the tank; thence forward between the ends of the division-plates to the pipe. Third, to heat the front oven separately, all the dampers should be shoved back against the bottom of the tank, which closes the horizontal flue *m* under the tank, and turns the draft down the side flues and under to the front end of the front oven; thence over the ends of the division-plates *s s* into the extra flue *r* in front of the oven, and down into the center flue and back to the pipe. Fourth, for a direct draft, all the dampers should be drawn forward, which closes the three center upright flues, and turns the draft round under the front of the bottom of the tank, and round the rear of the upright division-plates *s s*; thence up into the pipe. Fifth, to throw the draft to one side of the hot-air chamber W, and under one end of the double tank only, the center damper *u* should be drawn forward, and one side damper shoved back, and the other side damper drawn forward, which closes the center upright flue under the pipe, and one end of the horizontal flue under the tank, and turns the draft to the other side of the stove under the end of the tank D; thence round the rear of the division-plate *s* and up into the pipe.

For the purpose of preventing the top of the stove from being injured by the heat, and to increase the heat in the two ovens, the centers of the top of the stove are made double, with corresponding open spaces in each separate piece sufficient for the air to pass through, as shown by the darts, which also connect with the hot-air chamber W in the top flue of the stove, between the griddles, extending from the fire-pot to the circular plate O in front of the pipe. The air is taken in at the holes *y y y y y* in the top of the centers of the top of the stove, and conducted through the connecting open spaces into the hot-air chamber, and down into the oven through the slide-damper *z* in the top of the front oven; thence through a tube or tubes, M, through the center flue between the ovens into the extra oven B, and through the rear plate of the extra oven at the damper N into the flue or draft of the stove, where the same highly-heated air, after passing through the oven, is again brought into use by passing round the ovens, which will further add to the heat of the ovens; and when the heat is not required for heating the extra oven, the tube or tubes M may be closed, and the highly-heated air taken through the damper Q in the rear of the fire-



pot, and passing through the fire it will give an effectual hot-air draft, which will greatly facilitate the process of combustion.

*Claims.*

I claim as my invention—

1. The combination of the coal-pot A, the grates *b* and *c*, the suspension-hooks *d d*, the lever *l*, the ash-pan *g*, the coal-pan *h*, the front plate *i*, and projection *k*, in the manner and for the purpose substantially as set forth.

2. The combination of the three slide dampers *u u u*, the extra oven B, and double tank D, substantially as and for the purpose hereinbefore set forth.

3. The combination of a part or all of the

double centers of the top of the stove R R R R R R, the air-chamber W, the dampers Z and Q, substantially as and for the purpose hereinbefore set forth.

4. The combination of all or a part of the double centers of the top of the stove R R R R R R, the air-chamber W, the dampers Z, Q, and *x*, the tube M, and the damper N, with the three slide dampers *u u u*, the extra oven B, and double tank D, substantially as and for the purpose hereinbefore set forth.

HANFORD INGRAHAM.

Witnesses:

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S. C. MUMFORD.