

A. CRUMBIE & D. DONALD.
Bakers' Ovens.

No. 158,916.

Patented Jan. 19, 1875.

Fig. 1.

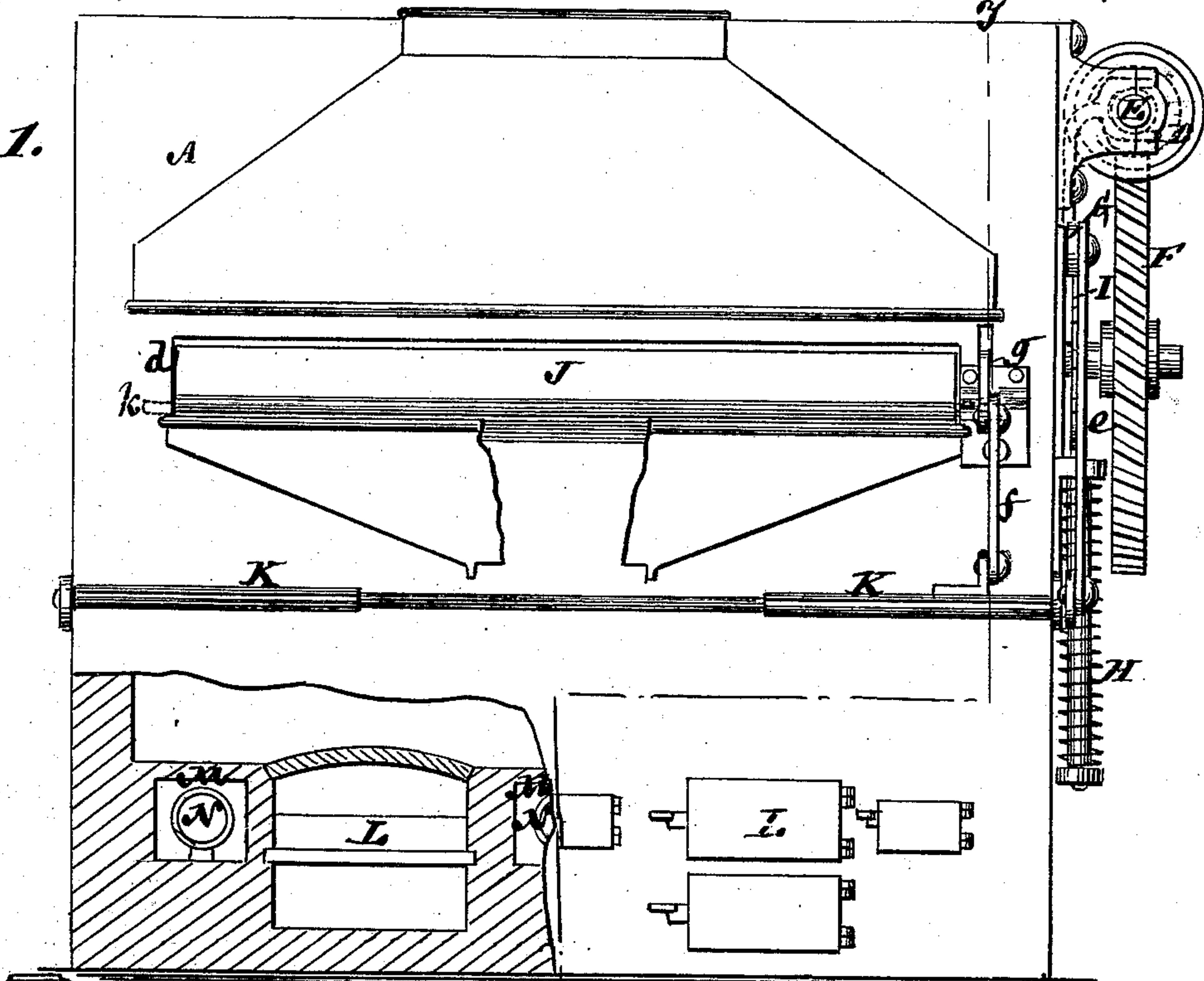
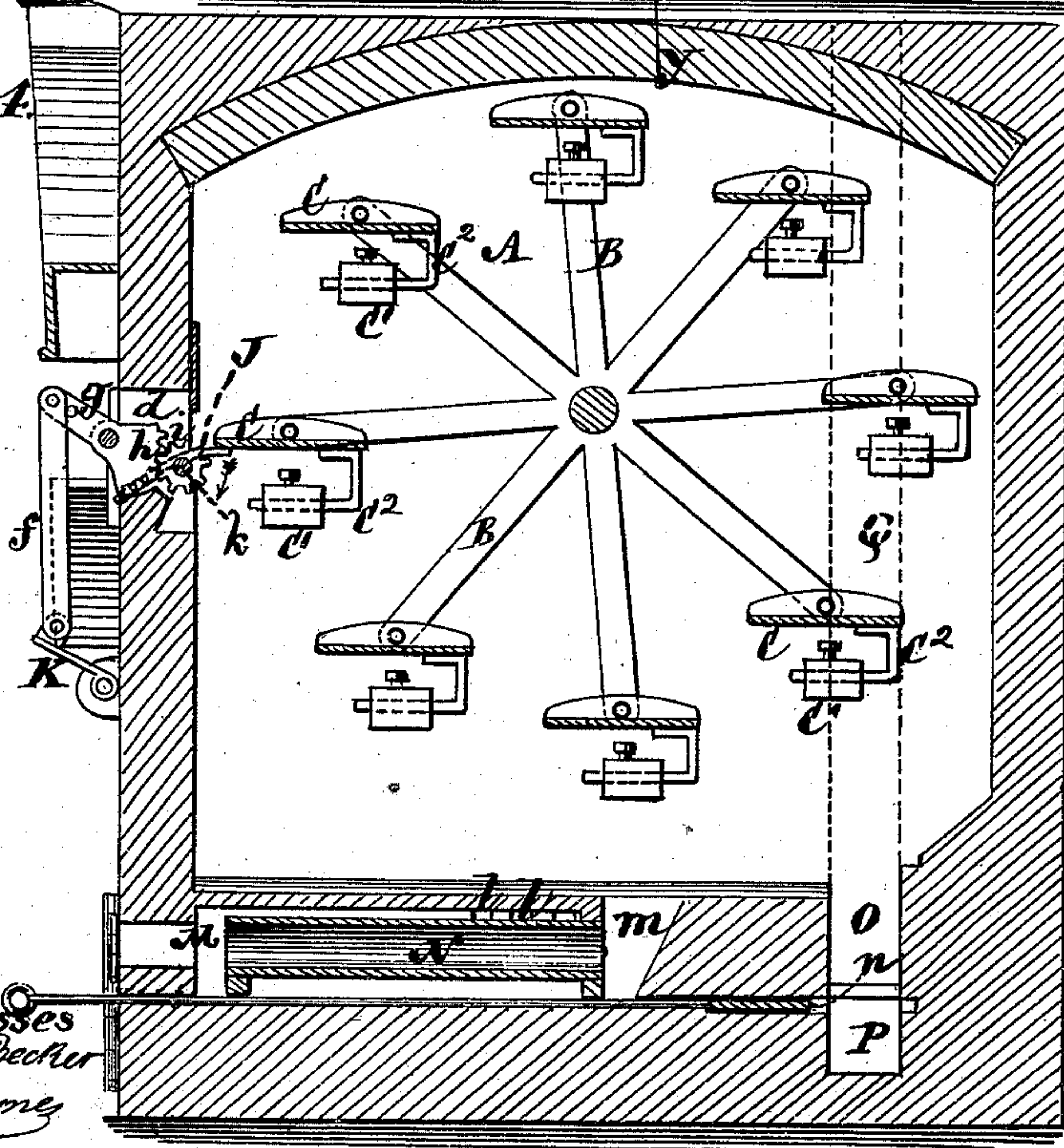


Fig. 4.



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by their Attorneys
Brown & Allen

Witnesses
John Becker
J. Haynes

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Fig. 2.

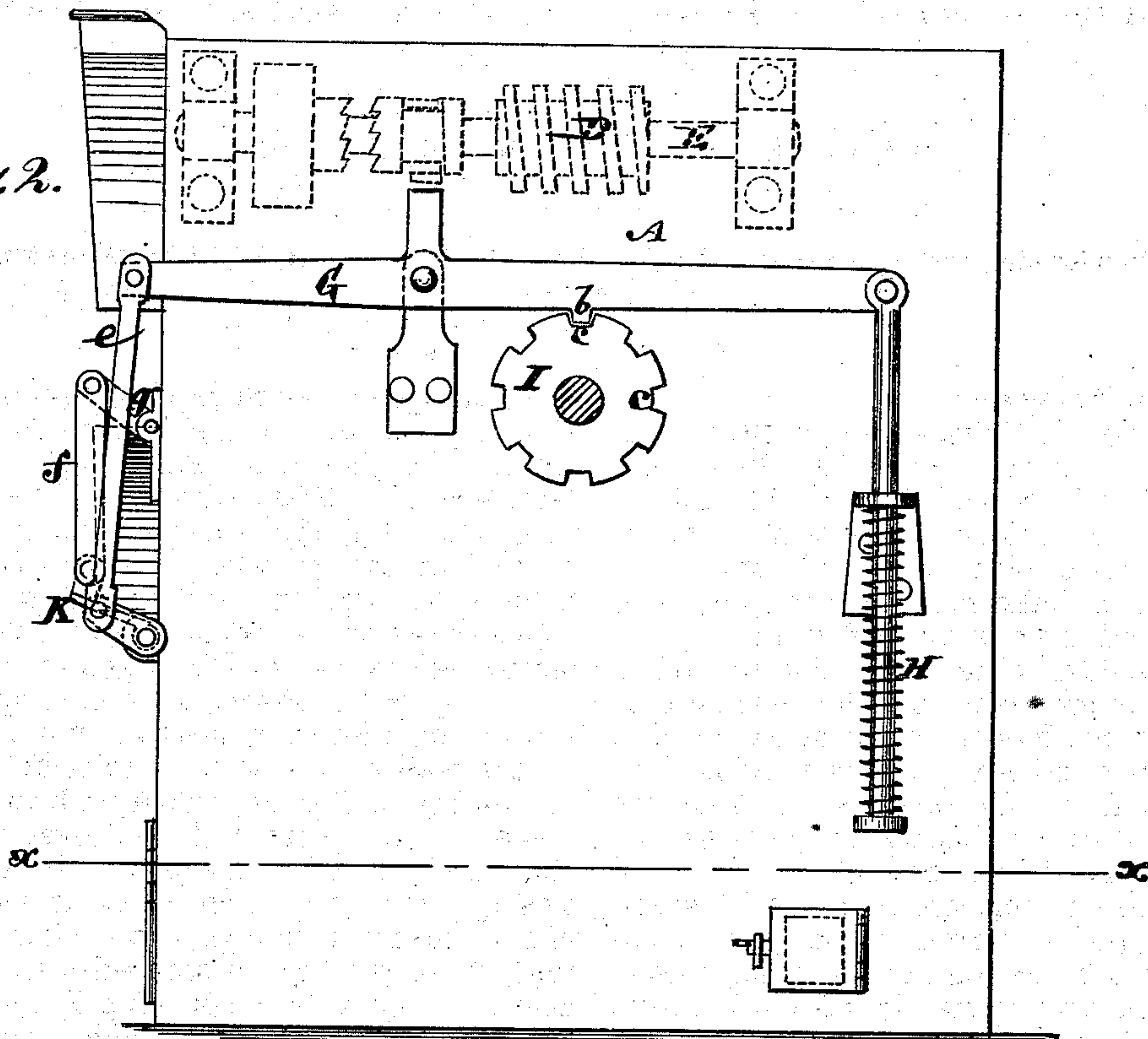
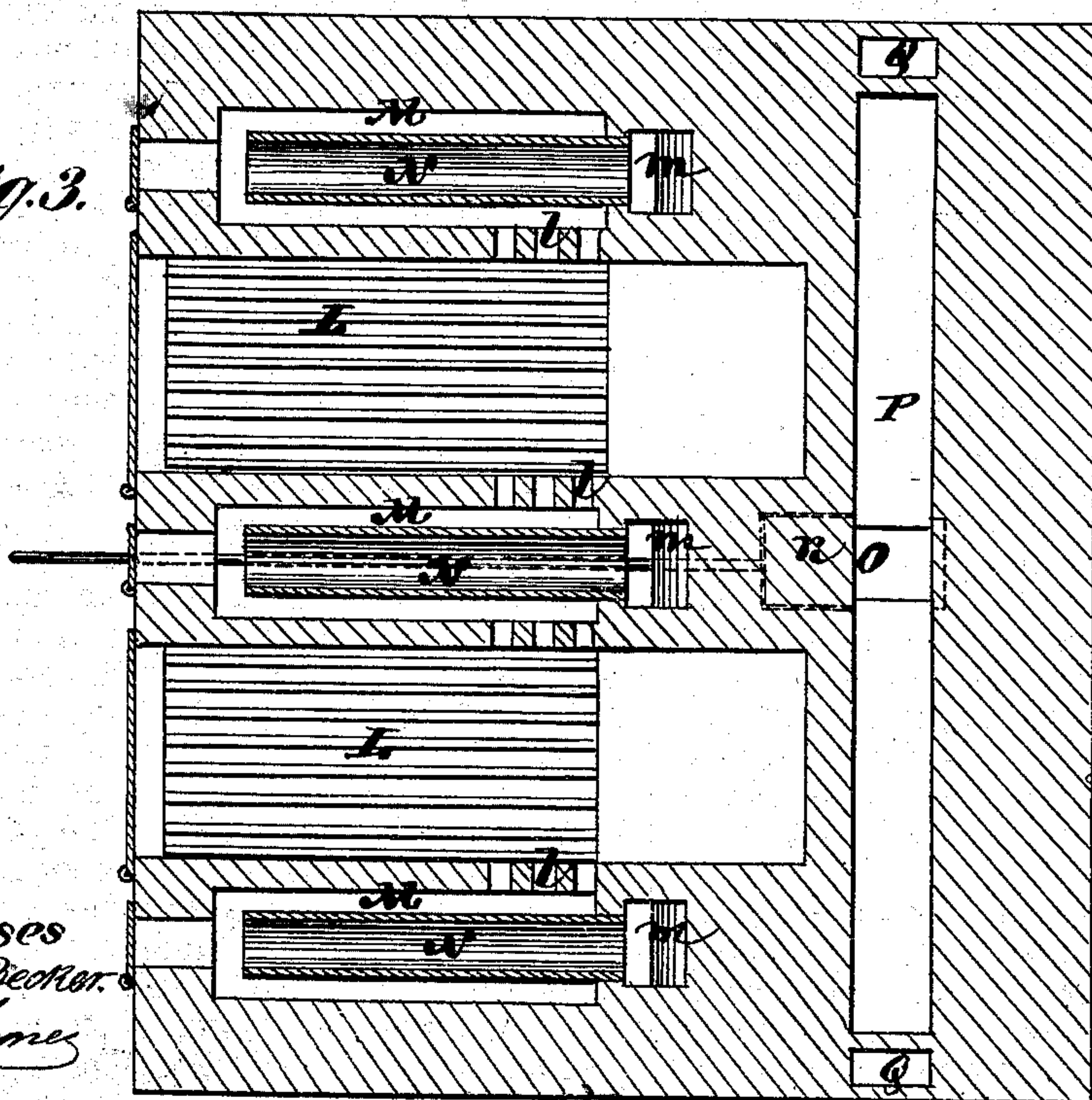


Fig. 3.



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UNITED STATES PATENT OFFICE.

ALEXANDER CRUMBIE, OF NYACK, AND DAVID DONALD, OF BROOKLYN,
NEW YORK.

IMPROVEMENT IN BAKERS' OVENS.

Specification forming part of Letters Patent No. **158,916**, dated January 19, 1875; application filed
July 30, 1874.

To all whom it may concern:

Be it known that we, ALEXANDER CRUMBIE, of Nyack, in the county of Rockland and State of New York, and DAVID DONALD, of Brooklyn, in the county of Kings and State of New York, have jointly invented certain Improvements in Bakers' and other Ovens, of which the following is a specification:

This invention, while applicable in part or in whole to other ovens, is mainly designed to be applied to mechanical ovens for bakers' use, and in which a series of pendent bread-holders are employed, as, for instance, in what are known as reel-ovens, although an endless chain may be substituted for the reel.

The invention consists in a combination, with the flues, or certain of them, of open-ended retorts in the base of the oven, whereby, while the oven is mainly heated by radiation from its base, the gaseous products of combustion are caused to circulate first around or on the outside of and then through retorts in the flues, and not only made more economically available, as regards utilization of the heat, but all smoke and noxious particles or gases are consumed before escape of the purified heated products into the oven or baking-chamber thereof. The invention also consists in a combination, with stop mechanism for arresting the motion of the bread-holders when opposite the charging and discharging aperture, of an automatically-operating door for opening and closing said aperture in unison with the stop motion. The invention also includes a novel construction of said door, whereby the same is made to form a delivery-board for the baked articles from the bread-holders.

In the drawing, Figure 1 represents a partly-broken front view of a mechanical oven having my invention applied. Fig. 2 is a side view of the same. Fig. 3 is a horizontal section on the line *x x*, and Fig. 4 a vertical section on the irregular line *y y*.

A is the baking-chamber, containing a revolving reel, B, provided with any desired number of pendent trays or bread-holders, C. Said reel may be rotated by a screw, D, arranged on a shaft, E, and gearing with a worm-wheel, F, fast on the reel-shaft. On the shaft

E is arranged a clutch-driving mechanism for stopping and starting the reel, which mechanism may be similar to that described in Letters Patent No. 150,295, issued to ALEXANDER CRUMBIE April 28, 1874, the same serving, at the will of the operator, to arrest the bread-holders, for charging and discharging them, whenever a lever, G, connected with the clutch mechanism is allowed, by means of a weight or spring, H, to project a toe or stop, *b*, into any one of a series of notches, *c*, in a disk, I, on the reel-shaft, said notches corresponding in number and arrangement with the bread-holders. Connected with the lever G of the stop mechanism are means for opening and closing the door J, which controls the receiving and discharging aperture *d* of the oven, so that, when the reel is stopped with a bread-holder, C, opposite the opening *d*, by the stop *b* being allowed to enter a notch, *c*, the door J is automatically opened by the same motion to discharge the bread or other baked articles, and to refurnish or supply the emptied bread-holder, and, after the latter has been charged or loaded, and the stop-lever G thrown out of gear with the notched disk I to permit of the continued rotation of the reel, the door J is automatically closed. The means by which said door is opened and closed, in unison with the stop mechanism, may be varied; but as convenient a means as any is to connect the stop-lever G, by a rod, *e*, with a treadle, K, that may be used to control the stop mechanism, and which is connected, by a rod, *f*, with a lever, *g*, having a toothed sector, *h*, that gears with a pinion, *i*, on the axis or shaft *k* of the door J. By these means, too, and by the arrangement of the shaft *k* of the door intermediate of the width of the latter, said door J, when open, as shown in Fig. 4, serves to form a discharge board or surface for the baked articles from the bread-holder C in proximity to the opening *d*; also, it may be, to act as a support or rest to said bread-holder.

The pendent bread-holders C are not dependent on their own weight or that of the load they carry to preserve their horizontal position while rotating, and, consequently, are not hung at any great leverage to the arms of

the reel, but are closely pivoted thereto, as shown in Fig. 4, and their horizontal position preserved by means of weights C^1 , which may be adjustable on bent levers C^2 , arranged to project under the bread-holders. This construction and arrangement of the pendent bread-holders admit of a greater number of said holders being used within a given space or diameter without interfering one with the other.

The furnace part of the oven consists of any desired number of fire-places, L , arranged side by side in the base of the oven, and communicating, by lateral apertures l , with flue-spaces M , in which are open-ended retorts N , supplied with air, if necessary, by doors in front of the flues M . These retorts, which, becoming highly heated, serve to burn the smoke and obnoxious gases or coal-dust passing to them from the furnaces, connect, at their ends, by apertures m , with the interior of the baking-chamber through its floor, thus, in addition to the radiated heat from the base of the oven, furnishing purified heated air or gases, which finally pass off down a dip-flue, O , that is controlled by a damper, n , to a horizontal flue, P , having uptakes Q . The retorts N also form return-flues, the heated gases first passing along the flues M toward the front of the oven, and after-

ward in a backward direction through the retorts.

Instead of a natural draft, a forced draft, as by a blower, may be used to supply the furnace and retorts, or either, with air.

We claim—

1. The combination, with the flues M , of the internally-arranged open-ended retorts N , the lateral openings l , the fire-places L , the apertures m , and the baking-chamber A , substantially as and for the purpose herein set forth.

2. The combination, with the stop-lever G , its toe b , and the notched disk I , of a door, J , and mechanism for automatically opening and closing the charging and discharging aperture d , in relation with the traveling bread-holders, essentially as herein set forth.

3. In combination with the traveling bread-holders C and aperture d , the door J , hung on an intermediate axis, k , and constructed to form, when thrown open, a delivery-board for the baked articles, substantially as shown and described.

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Witnesses:

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