

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

No. 161,489.

Patented March 30, 1875.

Fig. 2.

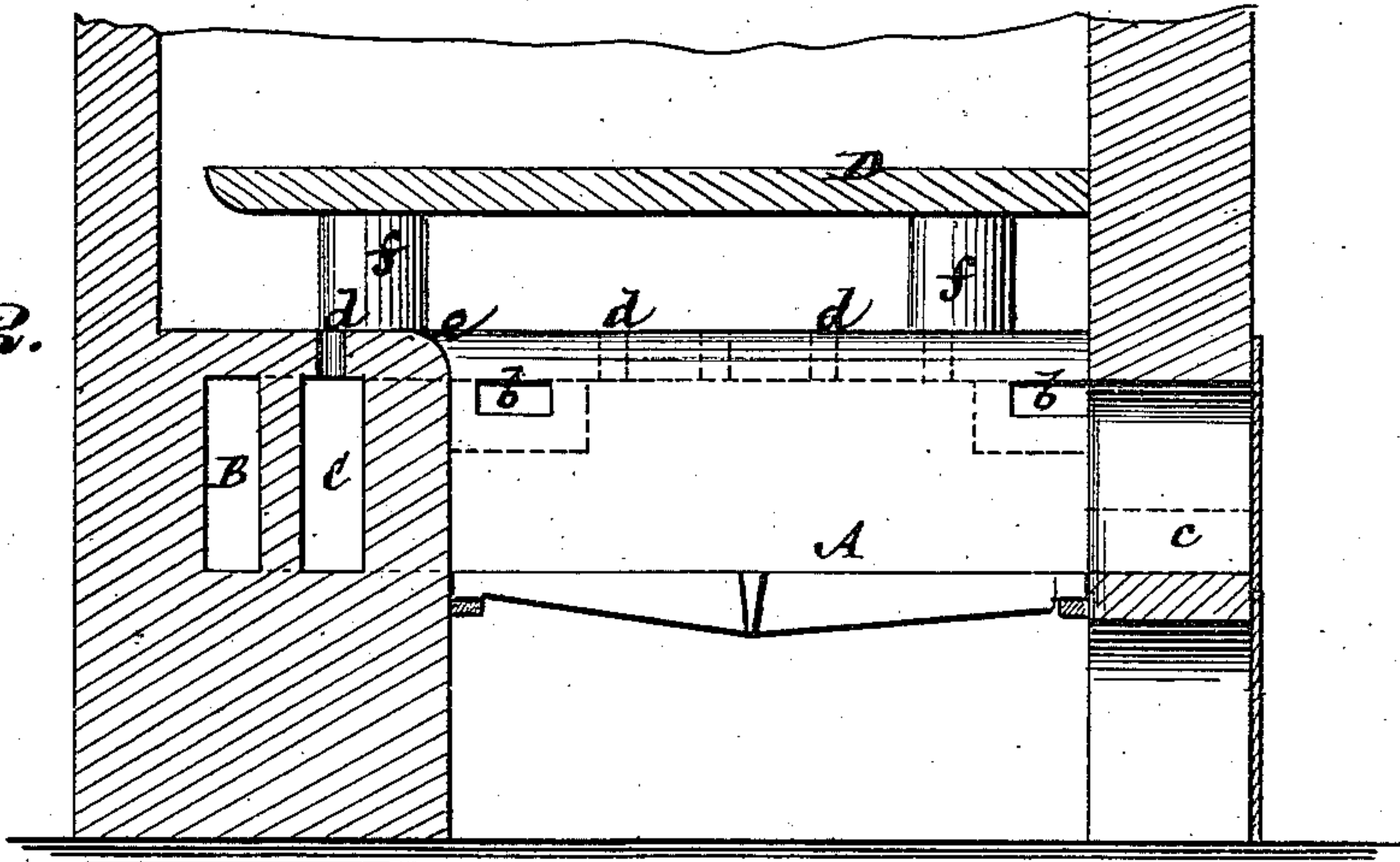


Fig. 3.

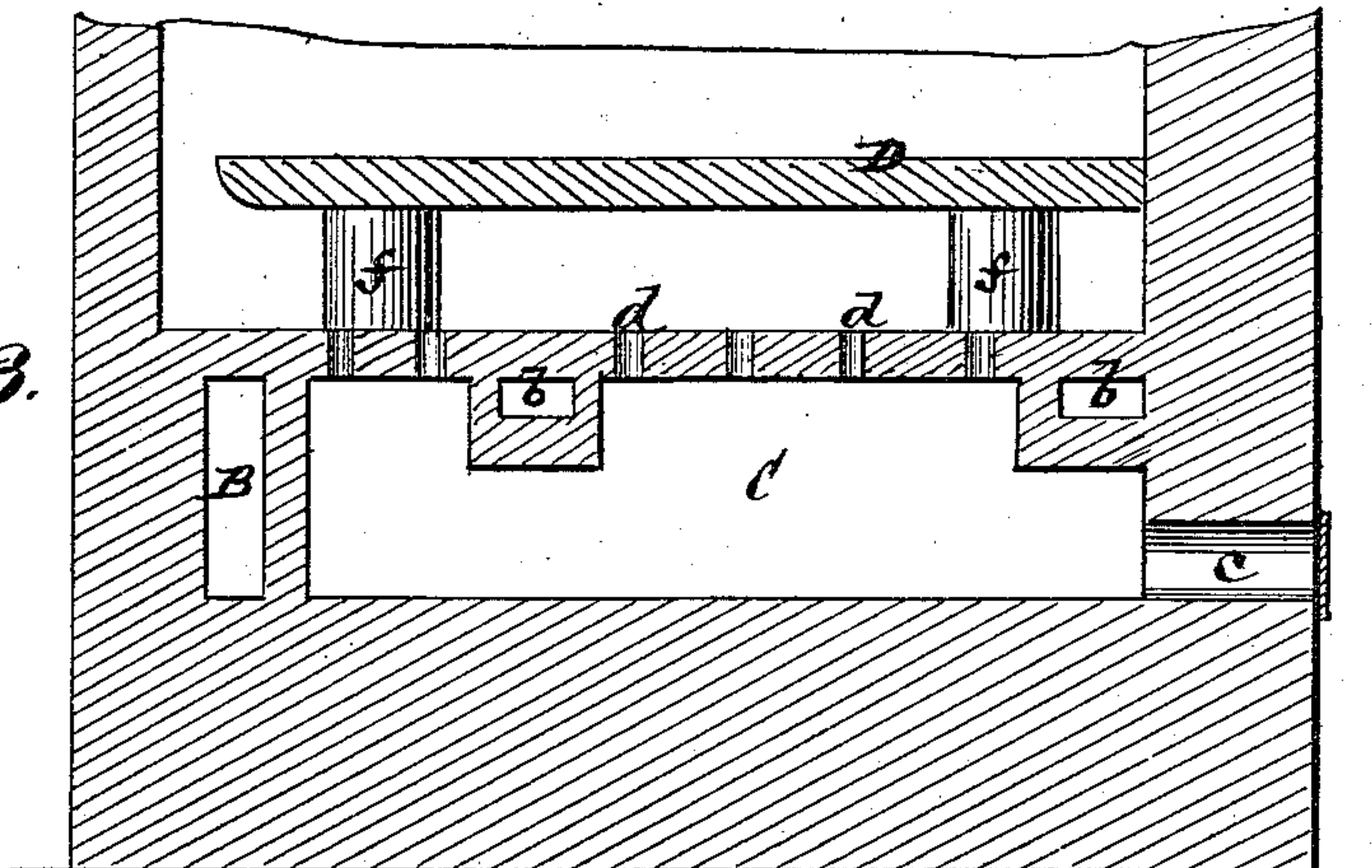
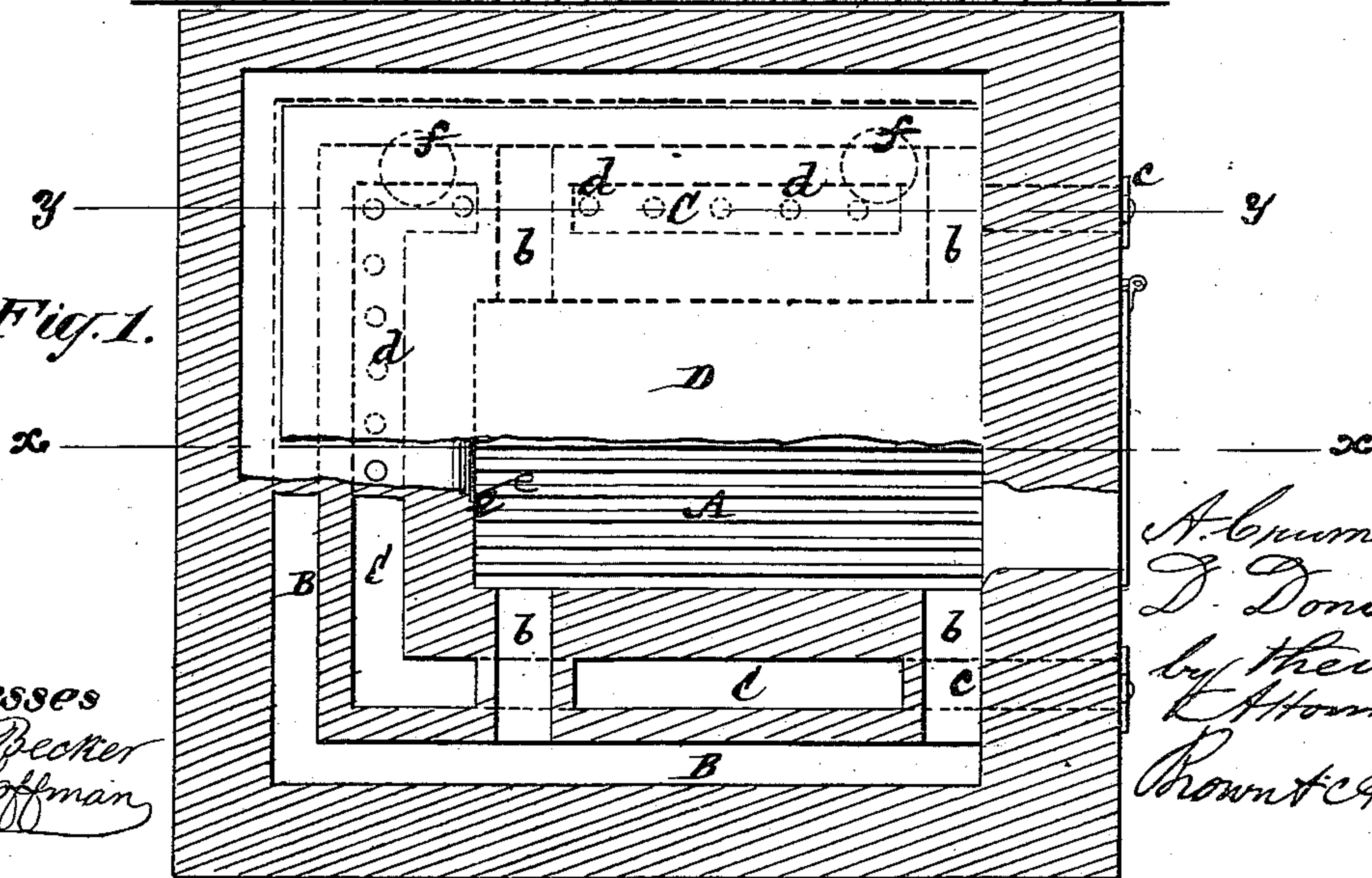


Fig. 1.



Witnesses  
John Becker  
B. W. Hoffman

A. Crumbie  
D. Donald  
by their  
Attorneys  
Brown & Allen



# UNITED STATES PATENT OFFICE

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

## IMPROVEMENT IN FURNACES OF BAKERS' OVENS.

Specification forming part of Letters Patent No. 161,489, dated March 30, 1875; application filed  
March 4, 1875.

*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 invented a new and useful Improvement in Furnaces of Bakers' Ovens, applicable also to other purposes; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing which forms part of this specification.

This invention, while applicable, among other purposes, to kilns, is more especially designed to be applied to bakers' ovens, and will here be described more particularly with reference to such use.

Applied to bakers' ovens the invention possesses all the advantages of baking by direct heat from an open fire, while the combustion of smoke is rendered perfect, and the dust prevented from rising into the oven.

The invention consists in a combination with one or more air chambers or space having inlets for the supply of fresh air thereto, and the fire-chamber of the furnace by which, in connection with passages therefrom, said air-chambers are heated, of a shield or cover to the furnace, whereby the gaseous products of combustion are made not only to impinge upon said shield and the oven is heated by radiation from the latter, but the heated air escaping from the air-chambers is made to mingle with the gaseous products of combustion as the latter pass from the fire-place under the shield, and the smoke and other inflammable gases thereby consumed, and the whole heat made to pass into the oven free from smoke and dust.

In the accompanying drawing, Figure 1 is a semi-sectional plan of the improved furnace; Fig. 2, a vertical section on the line *xx*, and Fig. 3 a further vertical section on the line *yy*.

A is the fire-place of the furnace, which is open above, and *b b* branches therefrom in communication with an outside space, B, of a hollow outer wall, within which the gases from the fire-place are at liberty to collect or circulate. Between this space or chamber B

and the fire-place A is an air-heating chamber, C, formed by an inner hollow wall inclosing the fire-place. This air-heating chamber C is supplied with air from the exterior by inlets *c c*, and said air, after being thoroughly heated, is free to pass out through apertures *d* in the top of the furnace, which top is left open at *e* for direct escape of the gaseous products of combustion from the fire-place. Mounted on the top of the furnace, by any number of interposed piers *f f*, is a shield or cover, D, which may be made of any number of slabs, and of an area equal to the top of the furnace, or thereabout. This shield or cover, which is only slightly raised above the top of the furnace and its opening *e*, becomes highly heated, in part by the direct action of the fire and in part by the combustion of the escaping gases therefrom, as affected by the commingling with said gases of the heated air from the chamber C, all the heated and inflamed gases passing up round the edges of the shield D into the oven. In this way, or by these means, all the advantage which is to be derived by direct heat from an open fire is obtained, together with a better distribution of the bottom heat by reason of the shield D, while the combustion of the smoke and other combustible escaping gases is rendered perfect, and the dust prevented from rising, thus contributing largely to the cleanliness as well as the economy of the oven.

Applied to a mechanical oven in which a reel, provided with pendent bread or other holders, is used, this improvement will be found of special advantage.

I claim—

The combination, with the fire-place A, open above, as described, and the outside heated space B, connected therewith, of the interposed hot air-chamber C, and the shield or cover D, substantially as shown and described.

ALEXANDER CRUMBIE.  
DAVID DONALD.

Witnesses:

BENJAMIN W. HOFFMAN,  
FRED HAYNES.