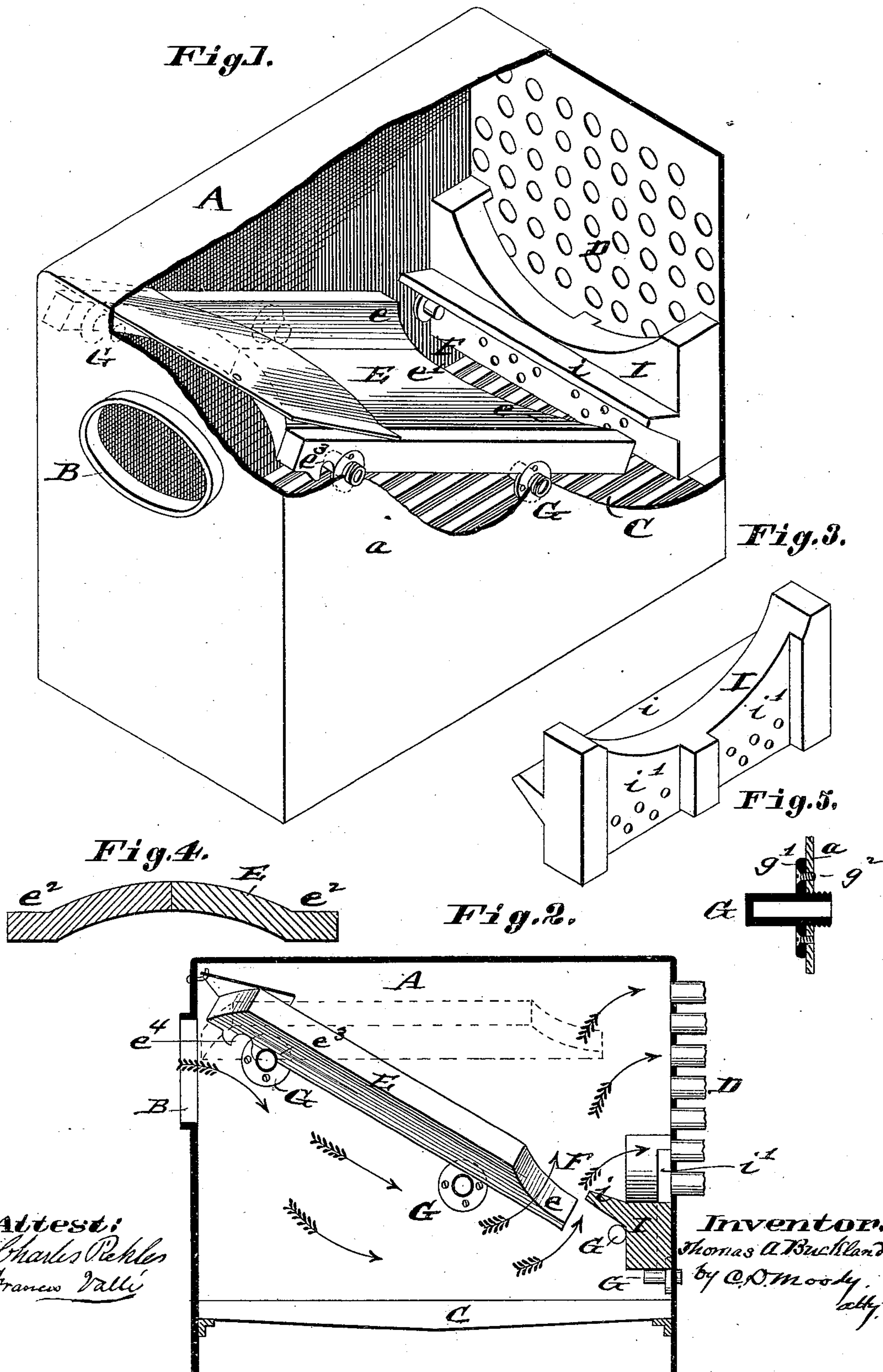


(No Model.)

T. A. BUCKLAND.  
LOCOMOTIVE FURNACE.

No. 258,709.

Patented May 30, 1882.





# UNITED STATES PATENT OFFICE.

THOMAS A. BUCKLAND, OF ST. LOUIS, MISSOURI.

## LOCOMOTIVE-FURNACE.

SPECIFICATION forming part of Letters Patent No. 258,709, dated May 30, 1882.

Application filed August 12, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS A. BUCKLAND, of St. Louis, Missouri, have made a new and useful Improvement in Locomotive-Furnaces, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a view in perspective of a locomotive-furnace having the improvement in question, the furnace-wall being broken away to exhibit the interior; Fig. 2, a central vertical longitudinal section; Fig. 3, a view in perspective from the rear side of the bridge-wall; Fig. 4, a cross-section of the diaphragm, and Fig. 5 a longitudinal section taken through one of the screw-plugs (and adjoining wall) used in upholding the diaphragm and bridge-wall.

The same letters denote the same parts.

The present invention relates to the construction and support of the diaphragm, to the bridge-wall, and to the mode of constructing the plugs used in supporting the diaphragm and bridge-wall.

A represents the locomotive-furnace of the usual kind, saving as modified by this improvement, B being the fire-door, C the grate-bars, and D the flues.

E represents the diaphragm. It is of tiling—a material that can be heated to a high degree and utilized in producing a more perfect combustion of the fuel, and, in shape, it extends laterally across the furnace from side to side thereof, and at the end toward the flues D, and at the sides respectively of the furnace it is extended to form the projections  $ee$ . The end  $e'$  of the diaphragm, between the projections  $ee$ , is shaped out and preferably in a curve. The effect is to form a throat, F, at the inner end of the diaphragm, through which the products of combustion can pass from beneath the diaphragm upward to the flues D. The diaphragm is supported in an inclined position upon the plugs G G. It extends nearly or quite back to the front end of the furnace, is preferably arched, and at the sides  $e^2 e^2$  is preferably flattened, as shown in Fig. 4. Where it rests upon the plugs G G it is shaped out, as shown at  $e^3$ , to fit partly around the plugs. This serves to keep the diaphragm longitudinally in place upon the plugs. There may be a se-

ries,  $e^3 e^4$ , of recesses in the diaphragm to enable the diaphragm to be adjusted longitudinally toward and from the flues D. The diaphragm, as indicated by the dotted lines in Fig. 2, may be turned upon its plugs G G, using the latter as fulcra. In such case the diaphragm should not extend to the front end of the furnace; but sufficient room should be left between the front of the furnace and the end of the diaphragm for the latter to move in, and a plate, H, may be used to close the opening between the front and the diaphragm. The plugs G are made hollow to provide for a water-circulation therein, and they are screwed into the wall  $a$  of the furnace, and to better support the plugs in the wall they are furnished with a flange,  $g'$ , which comes against and is fastened to the wall  $a$  by means of fastenings  $g^2$ .

I represents a tiling having a projection,  $i$ , extending toward and over, but (to prevent the tiling and diaphragm from fusing together) not at any point coming in contact with, the diaphragm E, forming a bridge-wall. The tiling is chambered at  $i'$ , forming a flue behind the tiling, between it and the wall of the furnace, extending from the bottom to the top of the tiling, to receive air from without the furnace, which is discharged through its opening  $i^2$  into the throat F. By having the flue in rear of the tiling open at the bottom the ashes do not collect in the flue so as to clog it.

I claim—

1. The combination of the furnace A, the diaphragm E, having the projections  $ee$ , and the tiling I, having the projection  $i$ , extending toward and over, but not coming in contact with, the diaphragm, substantially as described.

2. In a locomotive-furnace, the tiling I, having a flue in rear of and extending from the bottom to the top of the tiling, as and for the purpose described.

3. In a furnace, the combination of the supports G G and the diaphragm E, said diaphragm having a series,  $e^3 e^4$ , of recesses, as and for the purpose described.

Witness my hand.

T. A. BUCKLAND.

Witnesses:

C. D. MOODY,  
CHARLES PICKLES.