

L. AVERILL.
Lime Kiln.

No. 15,549.

Patented Aug. 19, 1856.

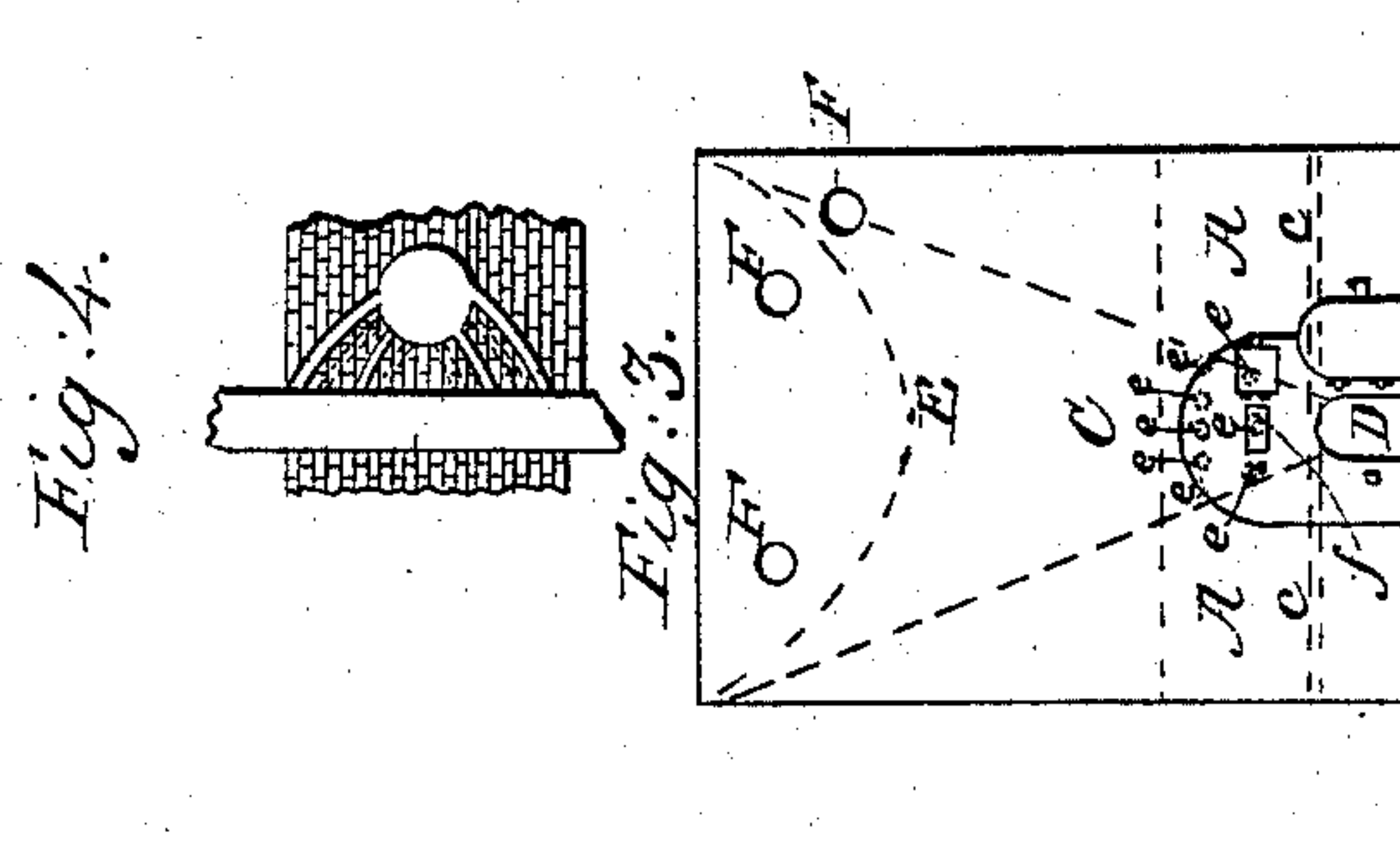
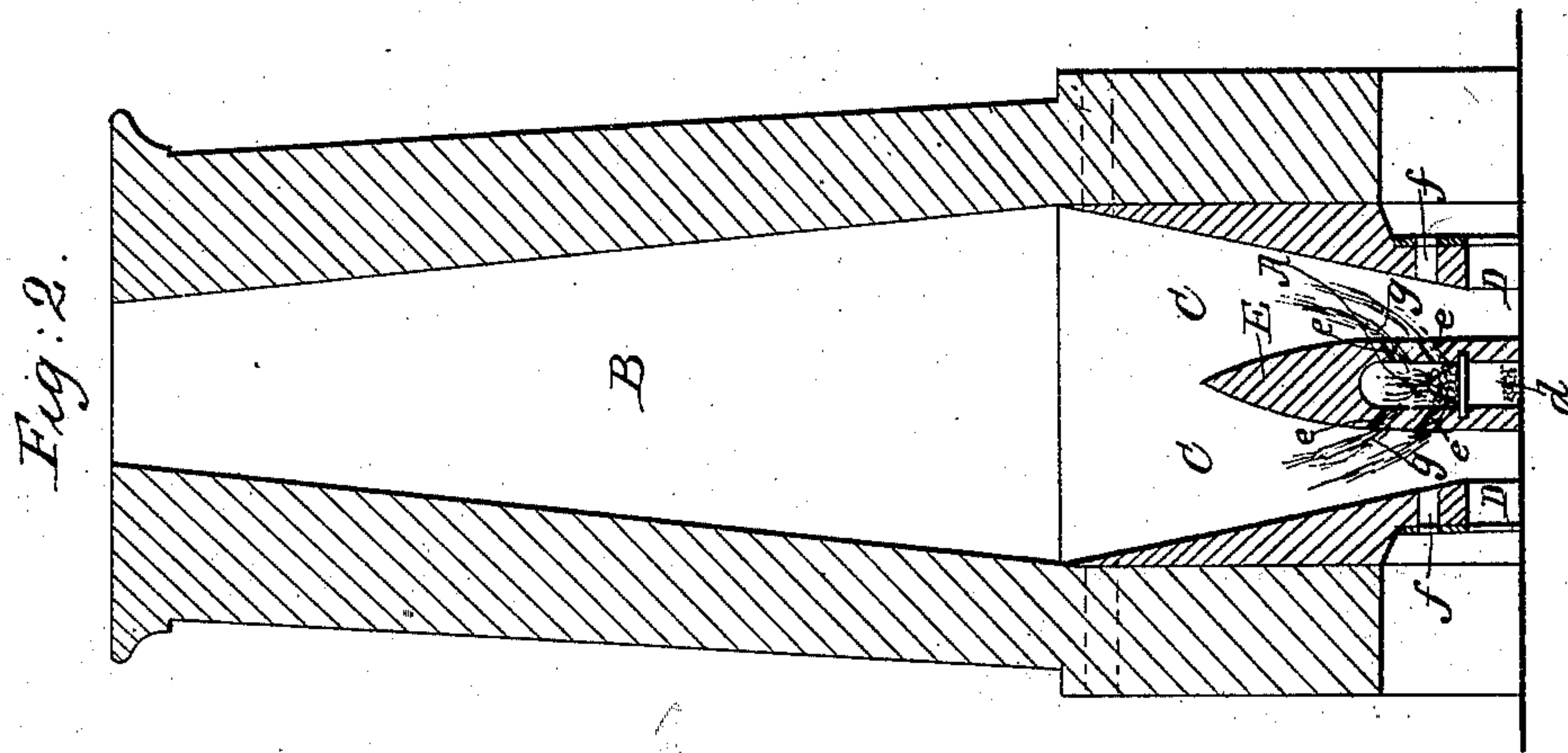
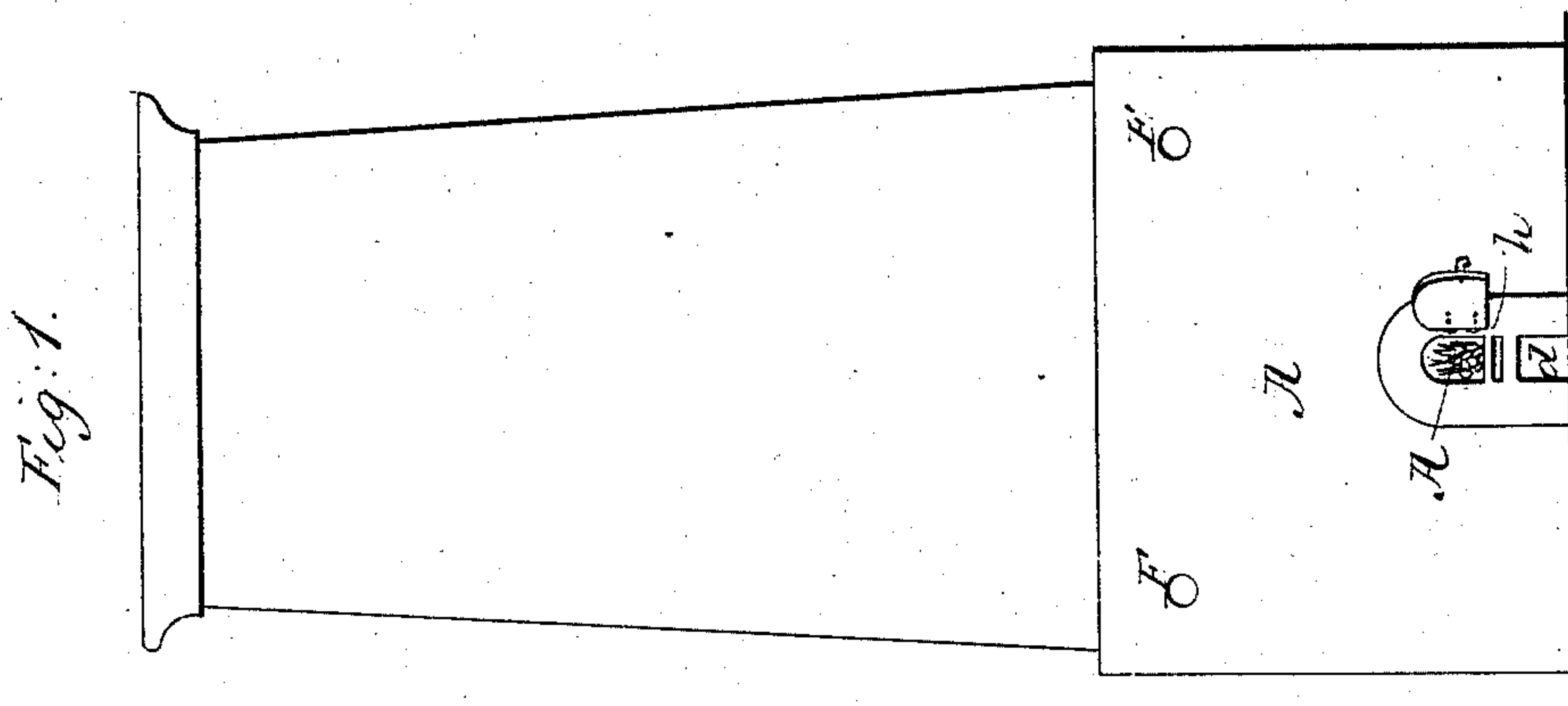
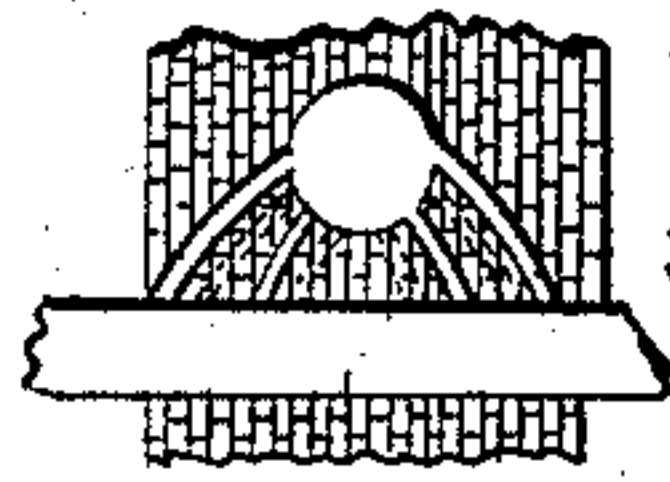


Fig. 4.



UNITED STATES PATENT OFFICE.

LEVI AVERILL, OF ELMIRA, NEW YORK.

LIMEKILN.

Specification of Letters Patent No. 15,549, dated August 19, 1856.

To all whom it may concern:

Be it known that I, LEVI AVERILL, of Elmira, in the county of Chemung, State of New York, have invented a new and useful
5 Improvement in the Construction of Kilns for Burning Lime; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the
10 annexed drawings, making part of this specification, and to the letters of reference marked thereon.

The same letters refer to like parts, in the various figures.

15 Figure 1 represents a front elevation of the external structure; Fig. 2 a vertical section through the center.

A is the furnace, B the main shaft, diminishing from the base to the top of the cupola, in the form of a truncated cone, and
20 branching from the base downward in the form of two inverted cones, C, C, each terminating by an opening in the cooling pit D, through which the lime is drawn off.
25 These inverted conical passages are separated by the pointed arched partition E, directly underneath which is the fire-arch A. The fuel is supported by transverse grate-bars, *c*, with an ash-pit *d* underneath,
30 open in front to allow of a free vertical draft of air through the fire. The fire passes from the furnace through the small flues *e*, *e*, into each branch of the shaft, from whence the heat ascends through the mass of limestone, the form of the shaft being such as to
35 produce a strong draft, and to concentrate the heat as it approaches the top and is less intense than nearer the furnace.

The flues, *e* *e*, the number of which may
40 be more or less according to the size of the kiln, are arranged in two horizontal rows, one over the other, covering one half of the circumference of the passage (see Fig. 4,) by means of which the fire is carried through
45 every part of the charge, burning the center and sides equally.

A window, *f*, is placed in each draw-arch, nearly opposite the flues to enable the operator to examine the condition of the
50 charge, and to clear out any obstructions, such as lime or soot, which may accumulate in the flues, and also for loosening the lime when drawing off. Port holes are also placed high up the base F, F, Figs. 1 and 3, to ad-

mit of loosening the charge should it not
draw freely. The inner walls of the passages C C are made to form a slightly projecting ledge, *g*, just over the flues so that the lime may fall clear and not fill the flues
in its descent. It may be drawn off at
60 either or both drawpits as often as required without stopping the fire, and the charge renewed as often through the top of the cupola, thus keeping up a continued action.

Either coal or wood may be used as the
65 fuel. To adapt it to the use of coal longitudinal bars of iron are placed upon the top of the transverse grate-bars, *c*, being put in through the opening *h*, Fig. 1, provided for that purpose. I prefer to use these extra
70 grate-bars with wood also, as they serve to protect the lower bars from the effects of the heat, and can easily be replaced should they give out. The partition E may be continued up to the top of the cupola should it
75 ever be thought desirable to manufacture both wood and coal-burned lime at the same time, and one shaft be charged with coal and stone together, which the heat from the furnace will ignite while burning the other
80 charge. After the coal is ignited the flues may be stopped and this shaft receive its draft from the draw-pit, the door of which should be left open for that purpose.

The conical passages and fire-arch are
85 constructed of fire-brick, and a lining of the same may be continued up the main shaft through the cupola to render it the more durable.

Fig. 3 represents the fire-chamber and
90 brick-work arch and passages in a transverse position to the section, Fig. 2. A A is the fire-arch; C, the conical passage; E, the arched partition; *e* *e*, the flues; D, the cooling pit; *c* *c*, the grate.
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What I claim as my invention and desire to secure by Letters Patent is—

The construction and arrangement of the kiln with small, separate branches, situated outside or around a single furnace, from
100 which the heat is conducted through converging passages to several points of their peripheries, substantially in the manner and for the purposes herein set forth.

LEVI AVERILL.

Witnesses:

CHAS. SWAN,
EDWD. V. CORELTON.