

THALES LINDSLEY.
Improvement in Brick Kilns.

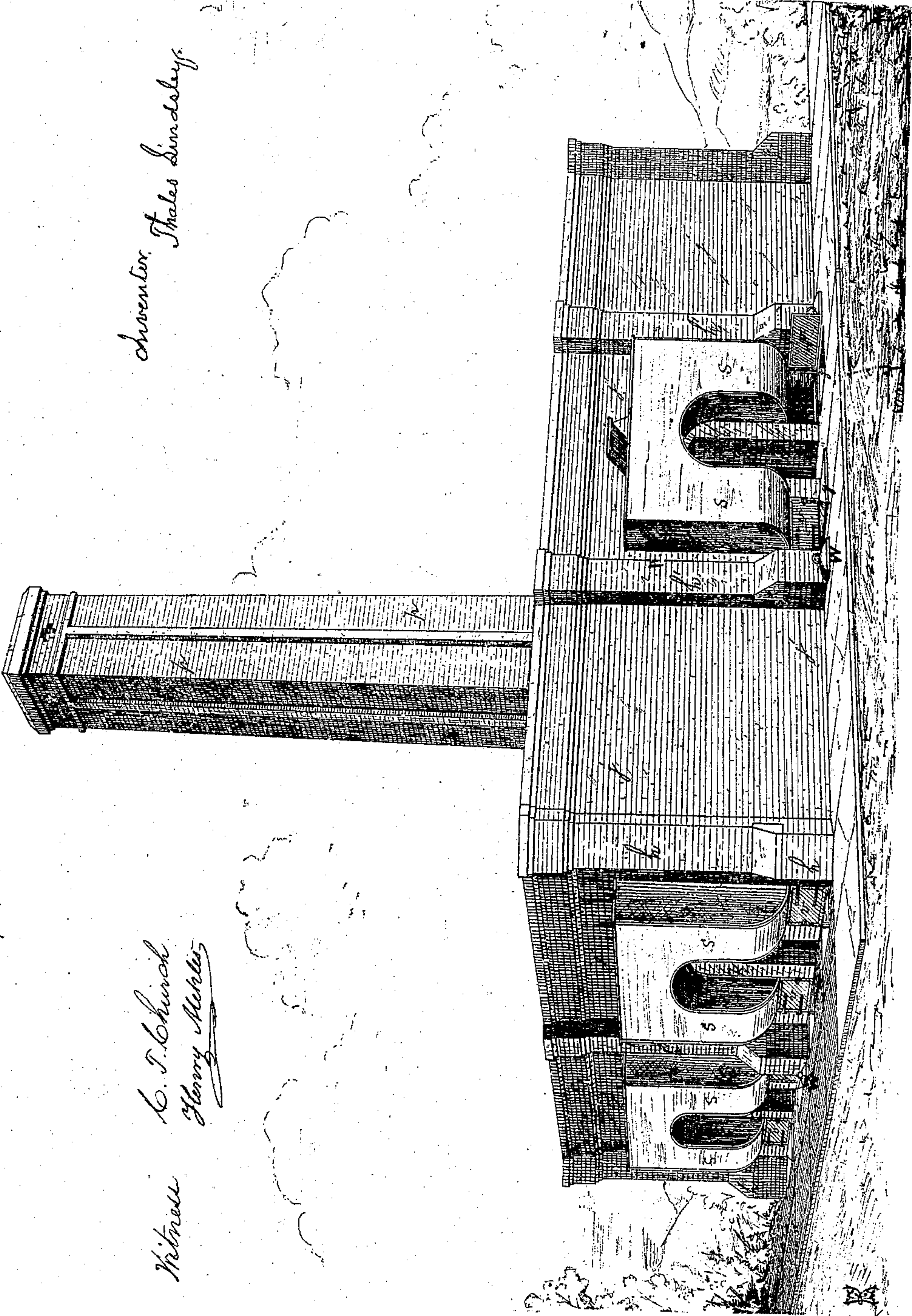
6 Sheets--Sheet 1.

Patented Oct. 24, 1871.

No. 120,202.

Witness
C. T. Church
Henry Morris

Inventor Thales Lindsley

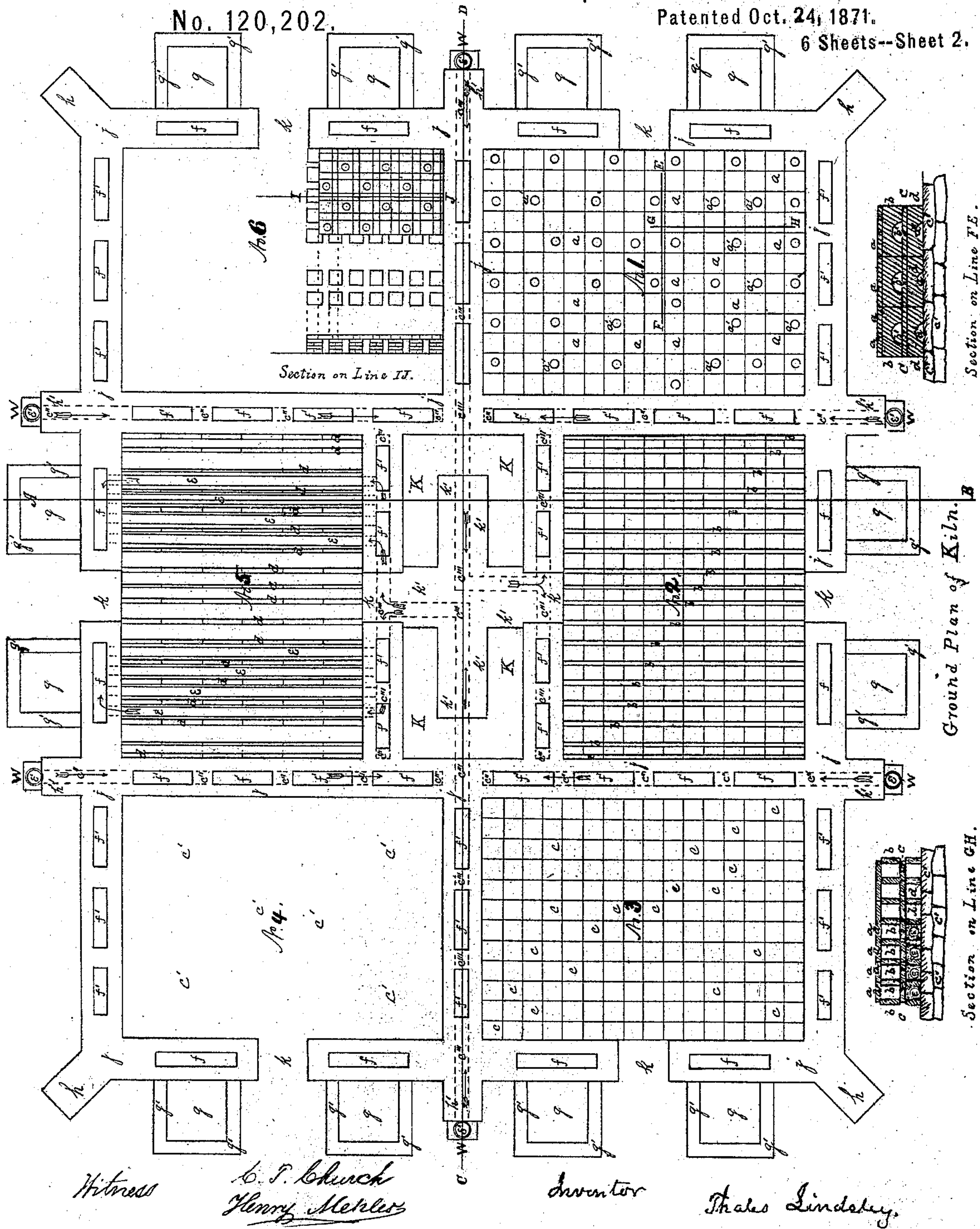


THALES LINDSLEY.
No. 120,202.

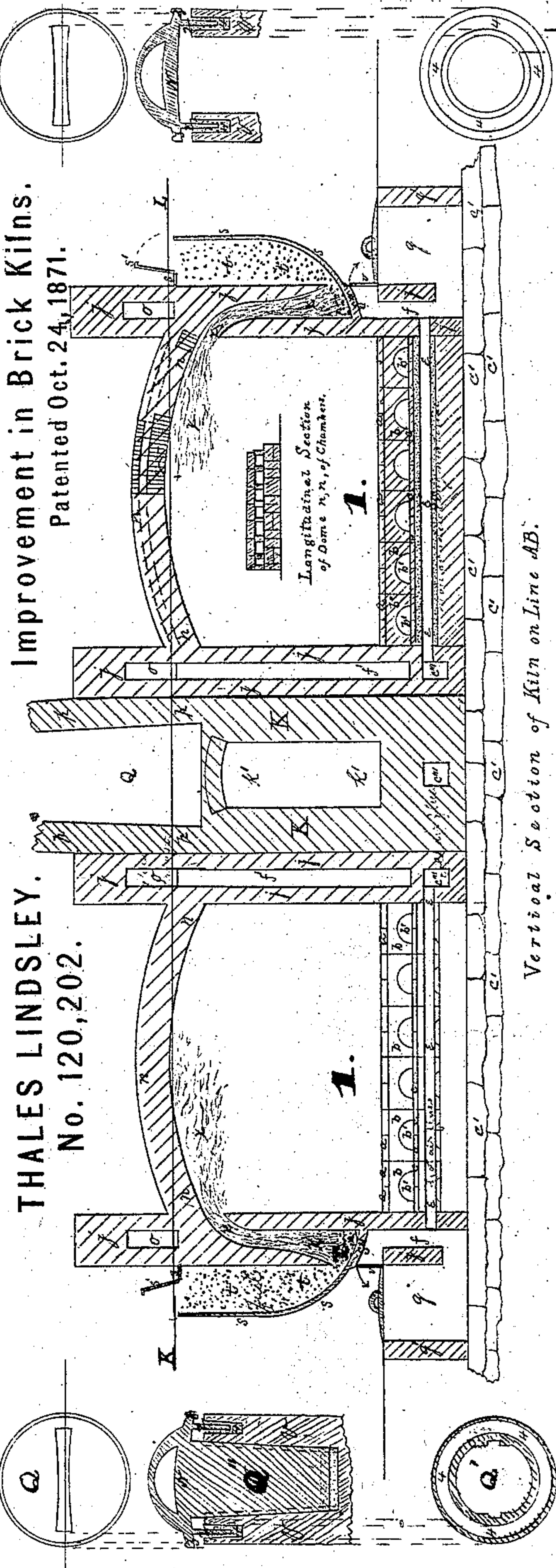
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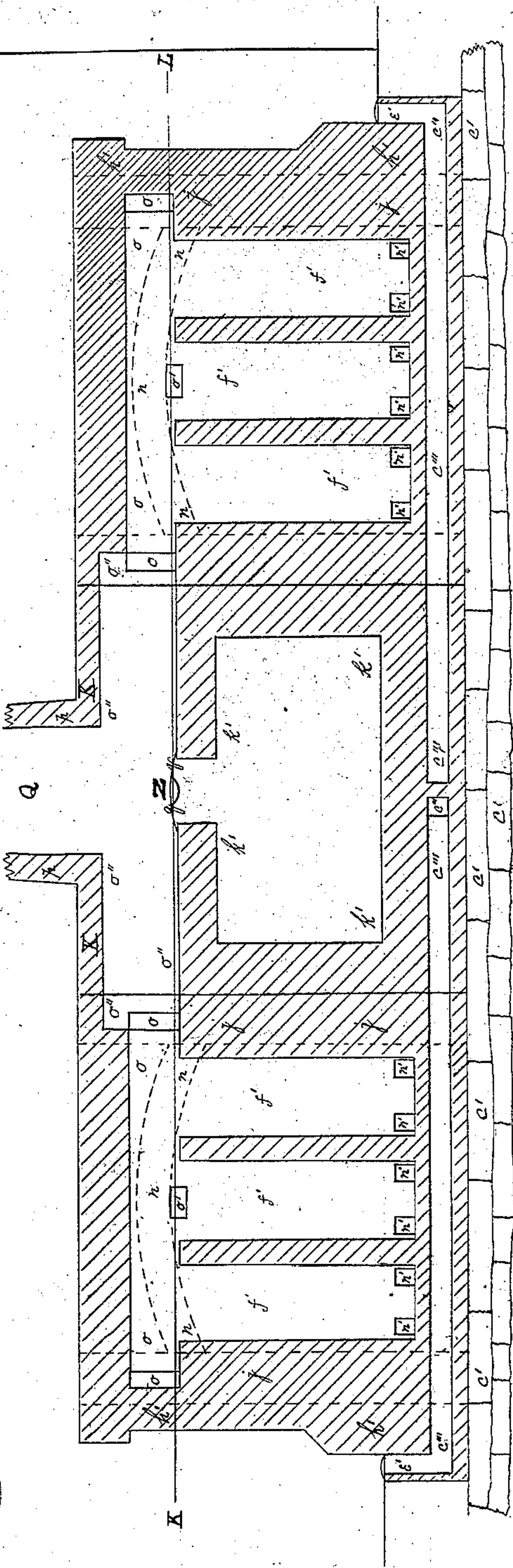
6 Sheets--Sheet 2.



THALES LINDSLEY.
No. 120,202.



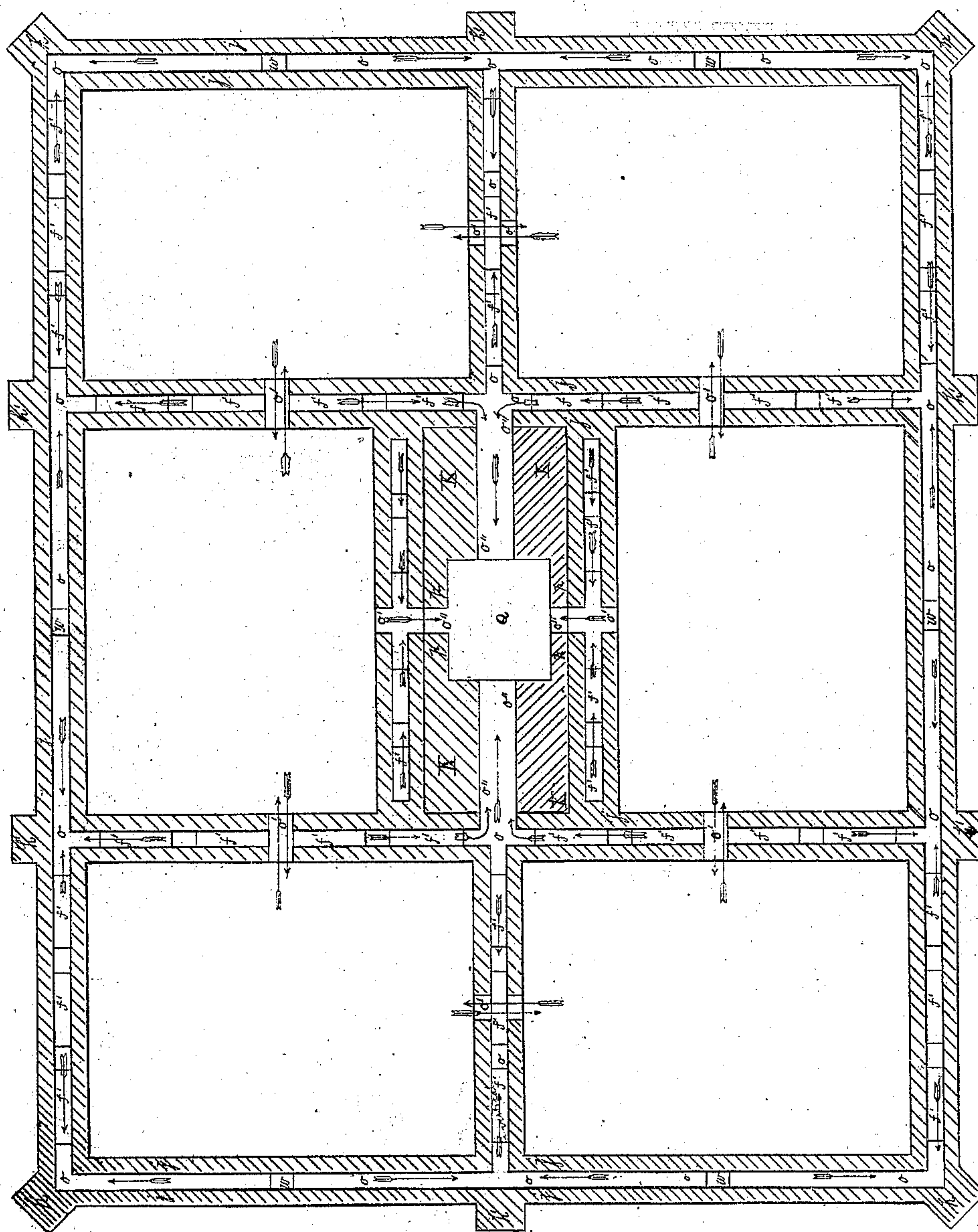
Vertical Section of Kiln on Line AB.



Vertical Section of Kiln on Line CD.

Witness } *L. J. Church*
Henry Mehl
 Inventor } *Thales Lindsley*

THALES LINDSLEY.
Improvement in Brick Kilns. 6 Sheets--Sheet 4.
No. 120,202. Patented Oct. 24, 1871.



Horizontal Section on Line KL.

Witness C. J. Church
Henry Meisler

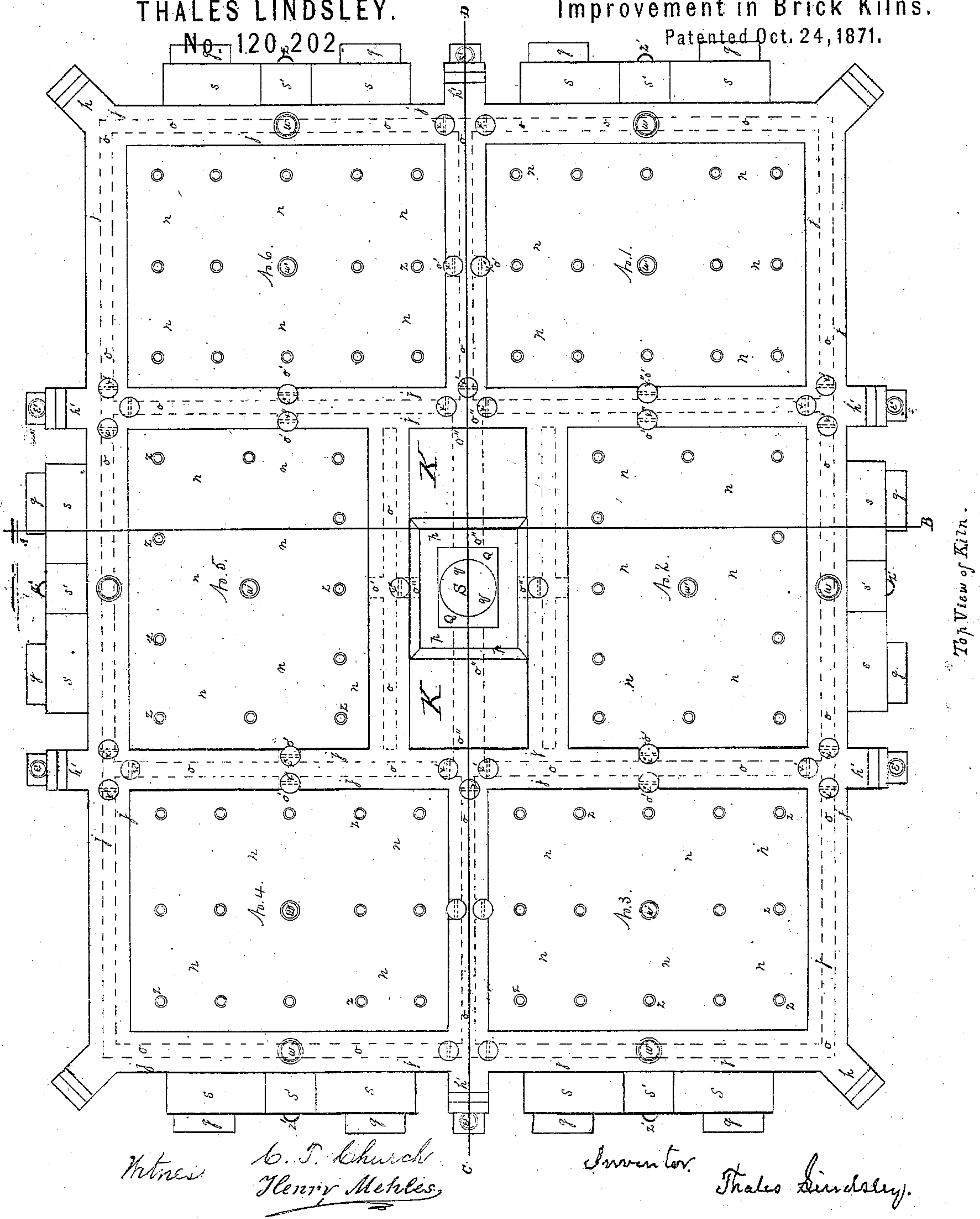
Inventor
Thales Lindsley.

THALES LINDSLEY.

No. 120,202

Improvement in Brick Kilns.

Patented Oct. 24, 1871.

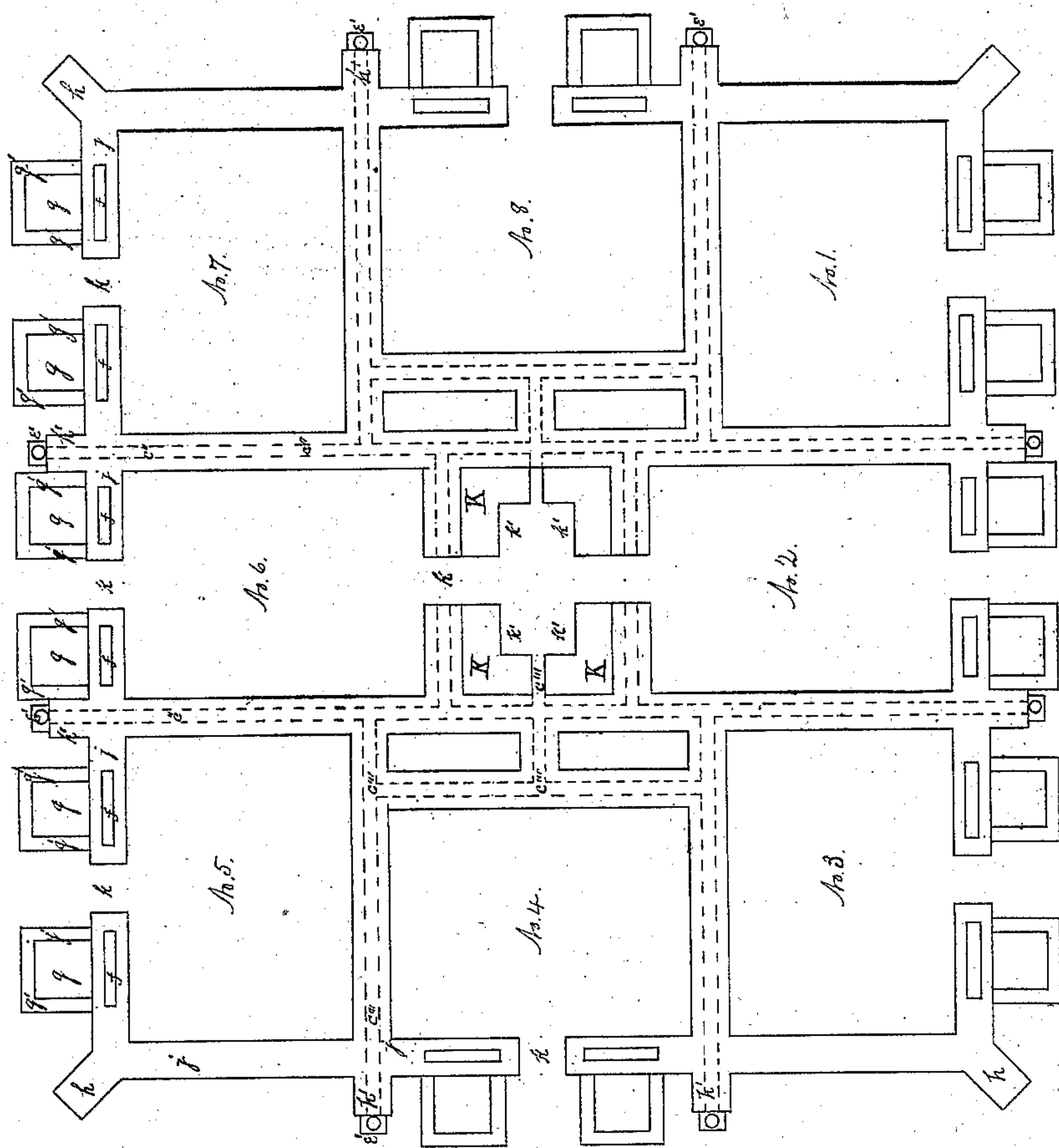


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Patented Oct. 24, 1871.



Ground Plan of Kiln.

Witness
C. P. Church
Henry Mehler

Given by
Thales Lindsley.

UNITED STATES PATENT OFFICE.

THALES LINDSLEY, OF NEW YORK, N. Y.

IMPROVEMENT IN BRICK-KILNS.

Specification forming part of Letters Patent No. 120,202, dated October 24, 1871.

To all whom it may concern:

Be it known that I, THALES LINDSLEY, of the city, county, and State New York, have invented a new and Improved Kiln for Water-Smoking, Burning, and Cooling Bricks, Tiles, &c., of which I declare the following is a full, clear, and exact description, such as will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification.

The nature of the invention is expressed and embodied in a kiln possessing the following properties, viz: First, self-feeding furnaces for the consumption of fuel; second, complete combustion of the carbon and inflammable gases from the grates; third, use of hot or cold air, or both, in effecting it at pleasure; fourth, making the quantity of draught, its direction, diversion, or consolidation, at the will of the operator; fifth, heating the kiln in sections, and making its operations continuous; sixth, burning and water-smoking its charge from the top downward, and cooling same in similar or reverse manner; seventh, uniform diffusion of hot or cold air, when in operation, as required; eighth, utilizing the heat given off from burning chambers by conveying same to where required in other localities in the kiln; ninth, burning, &c., uniformly, and thereby avoiding waste; tenth, forming the flues in and out of the walls; eleventh, a system of retaining buttresses; twelfth, rendering the operation of the several compartments independent or reciprocal, at will.

Sheet 1, of the drawing accompanying and forming part of this specification, represents a six chambered kiln in perspective with buttresses *h h'*, door-ways *k*, chimney *p*, fuel-bins *S*, with close scuttles *S'*, furnace doors *v*, ash-pits *g*, and entrance to cold-air flues *w*. Sheet 2, No. 1, shows the upper floor of a kiln-chamber, made of tiles *a*, resting on stringers of tile *b* in No. 2. with perforations *a'* for ingress or egress of hot or cold air, as required. The passages between the longitudinal stringers *b*, as shown in cross-section, at lower left-hand corner of drawing, as also the semi-cylindrical openings through each of the sleepers, which together form the longitudinal stringers, shown in sectional drawing at lower right-hand corner, together form inter-communicating flues for uniformly diversifying the hot or cold air required in burning, water-smoking,

or cooling, respectively. No. 3, same sheet, together with sections F E and G H, shows the second or middle floor, composed of tiles *c* resting on stringers *d* in No. 5, between which stringers *d* are passages *d'*, similar to the above, for diversifying hot or cold air, and continuous cold air-passages *e*, in No. 5, and section G H, for purpose of conveying cold-air draught through the furnace-flues *f*; thence up through furnace and into kiln-chamber. No. 4 is the foundation floor. No. 6 shows a different arrangement of the stringers of floors, leaving similar passages, &c., readily understood. In the general figure, *c''* and *c'''* represent cold-air flues from openings *e'* at W, communicating with fire-flues *f*, vertical flues *f''*, base of smoke-stack K, with passages *k* and *k'*, abutments, ash-pits, &c., and kiln-chambers 1 2 3 4 5 6. Sheet 3 shows a vertical section on A B of Sheet 2, at top, and vertical section on C D of Sheet 2, at bottom. In the upper figure I represents the chambers; S the cycloidal section of fuel-bin; S', the grate-bars in continuation of same curve; throat T for feeding fuel; close top-scuttle S'; fire-flues *x*; ash-pit *g*, with cover; furnace-doors *v*; cold air-flues *c'''*; transverse flues O, &c. The small sections at right represent a simple cover for flue openings, made air-tight. Similar left-hand sections represent a damper for cutting off the draught through any flue. Q is top view of cover. Q' is a view of the opening, showing the cylindrical flange-cup 4 to be partly filled with sand. Q'' is the blade of the damper, showing the flanged top 2 3, flange-cup 4. In lower figure, Z is the man-hole in bottom of chimney. O'' O'' transverse flues, &c.; *f''*, vertical flues; *n'*, openings into the passages under top floors; *c'''*, cold air flues; *k'* arched passage-way under chimney. Sheet 4, view of general construction of the triple walls used throughout the structure; system of horizontal flues, O O' O'', &c.; vertical flues *f''*, &c. Sheet 5 shows the top of the structure with air-ports W, and openings of different vertical flues and eye-ports, which are supplied with covers, and can be opened or closed, as required, to regulate the draught or change its direction. Sheet 6 is a ground-plan of kiln, showing system of horizontal cold-air flues.

Where the hot-air flues pass under the floor of a furnace, adjacent to the foundation floor, as at *e* of No. 5, in Sheet 2, they are packed on outside

with non-conducting material. In the domes of the chambers the inner and outer divisions of the triple wall, of which they are composed, are solid and compact, but the middle division is formed of stringers of brick laid transversely and on edge, placed the length of a brick apart, measured from middle to middle, thus leaving a series of transverse air-cells as long as the breadth of the chamber. Being confined closely, and being an excellent non-conductor of heat, these air-cells serve the purpose of two or three layers of brick. Triple walls are used throughout this structure, the inner and outer divisions of which are pierced when necessary to form passage-ways for doors, flues, &c., and the middle division being the medium containing all the horizontal and vertical flues embraced in the body-walls of the structure. Bricks and refractory stone and iron are the constituents of the building materials.

The mode of operating such a kiln as that hereinafter described will suggest itself to any one skilled in the art to which it appertains, and with the drawing itself. The description of same and the following claims will be all that is necessary to clearly distinguish and characterize my invention. It should be noticed, however, that the method of arranging the flues and dampers, herein shown, admits of so governing the efflux of air, hot or cold, from one passage that it may be made to traverse each of the other passages in the same or inverse order, and is therefore utilized in drying or water-smoking other compartments; and the drawing must not be understood as limiting the number of air-ports, dampers, and vents, which may be of any number desired.

What I claim as new, and desire to secure by Letters Patent, is—

1. A water-smoking, burning, and cooling-kiln, having the constituent parts herein described and shown, disposed with respect to each other, substantially as described, and performing severally and co-operatively, substantially the functions set forth.

2. A kiln-chamber, 1, in Sheet 3, in which the

upper half of the fire-flue and the bars of the fire-grate are arranged on a cycloid curve, said grate being provided with hinge and latch, all substantially as herein described.

3. The combination, with the fire-grate S'', of the fuel-bin S provided with the close-scuttle S', throat T, and throttle-valve, all constructed and arranged substantially as herein shown.

4. A system of triple walls used throughout the entire structure, the middle division of which being provided with the system of horizontal and vertical hot-and-cold-air passages *c c' c''*, &c., *O' O''*, &c., *f f' f''*, &c.—the outer and inner divisions provided with the slots and apertures *n'*, &c., for passage-ways or flues, all arranged and operated substantially as and for the purposes set forth.

5. The combination of the triple walls and buttresses, substantially as and for the purposes set forth.

6. A centrally-located smoke-stack provided with an independent foundation, certain ports, a man-hole in bottom of smoke-stack flue, and a groined arch, double passage-way, substantially as and for the purposes set forth.

7. The arrangement of horizontal and vertical hot and cold air-flues *O' O'' O''' O*, *e e'*, &c., *f f' f''*, &c., *c'*, &c., provided with dampers *Q'' n x*, &c.

8. The arrangement, with relation to the kiln and furnace and cold-air flues, of the ash-pits provided with the air-tight cover, substantially as described and shown.

9. Combination of perforated floors *a*, solid floor *c*, and interposed system of sleepers, stringers, and flues, substantially as shown and described.

10. The flue-damper provided with the annular-flange-seat and blade, as shown and described.

11. A kiln-chamber, combining the several parts above described, constructed and operating as set forth.

THALES LINDSLEY.

Witnesses:

HENRY MEHLES,
J. M. BENSON.

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