(No Model.)

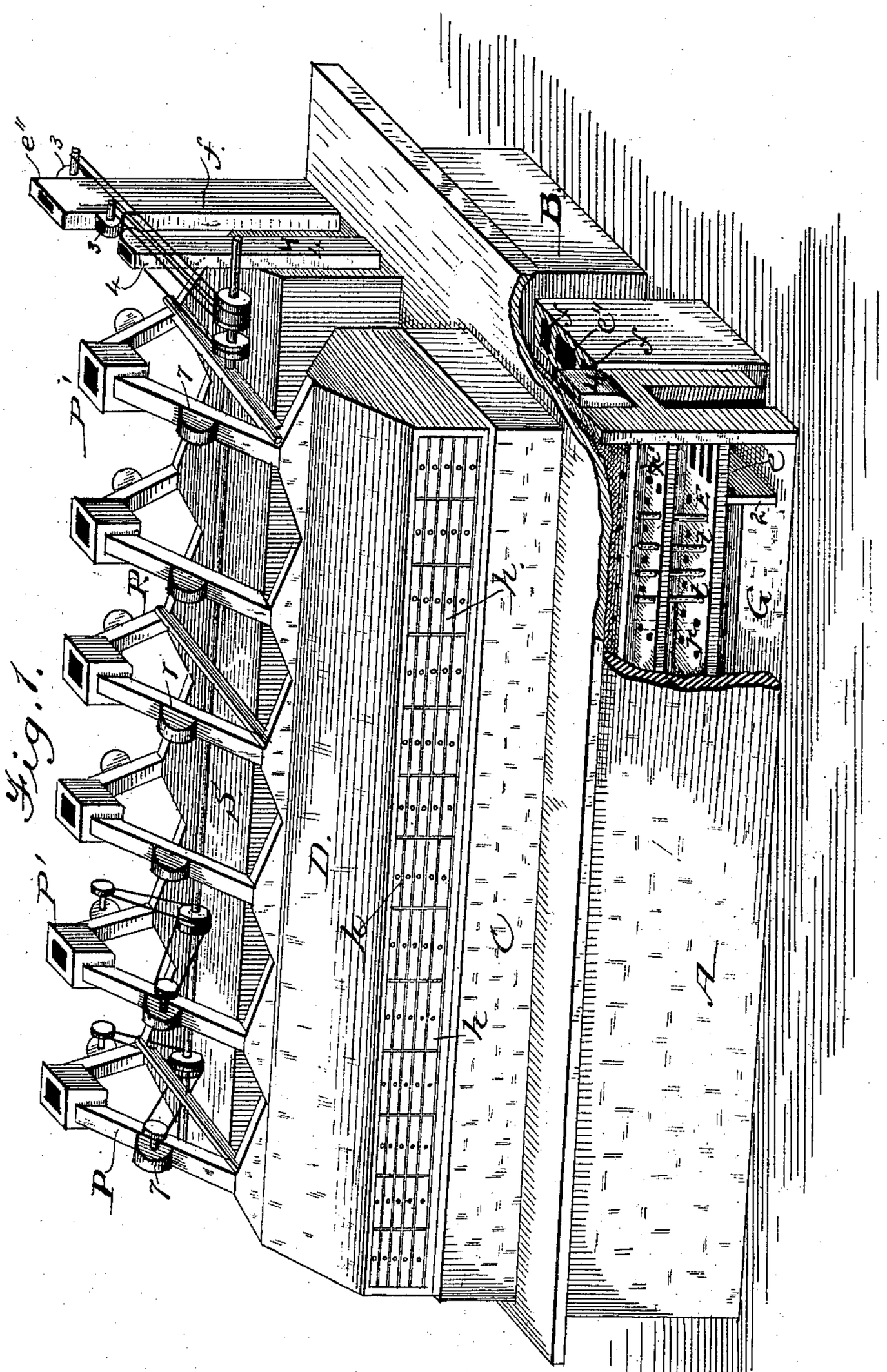
3 Sheets--Sheet 1

H. TILDEN.

Drier.

No. 232,572.

Patented Sept. 21, 1880.



Attest;
J. Walter Fowler,
Wm H. Morsell

Inventor;
Henry Tilden
Per Atty
A. J. Evans

(No Model.)

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Fig. 2.

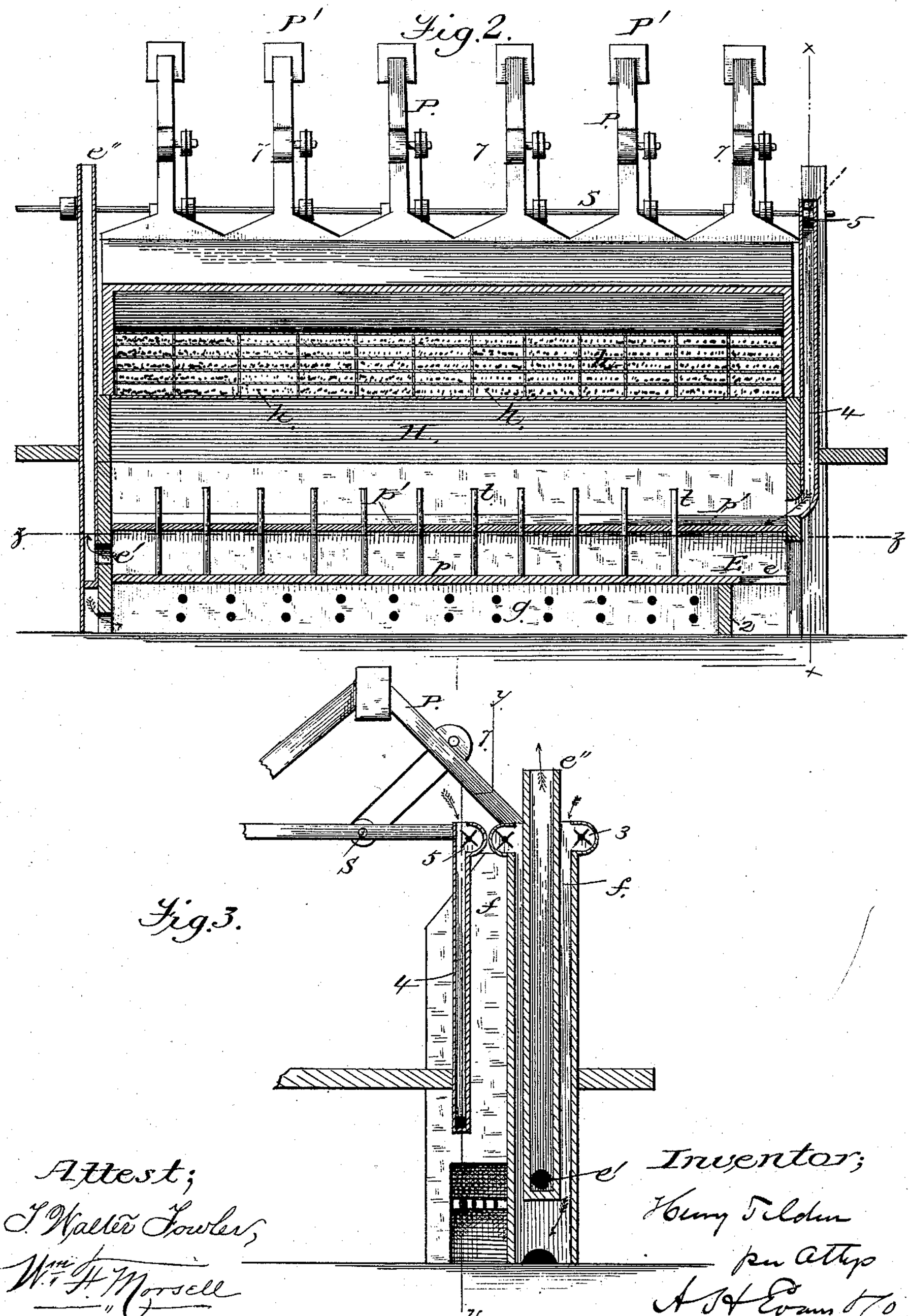

Fig. 3.

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(No Model.) 3 Sheets--Sheet 3.

H. TILDEN.

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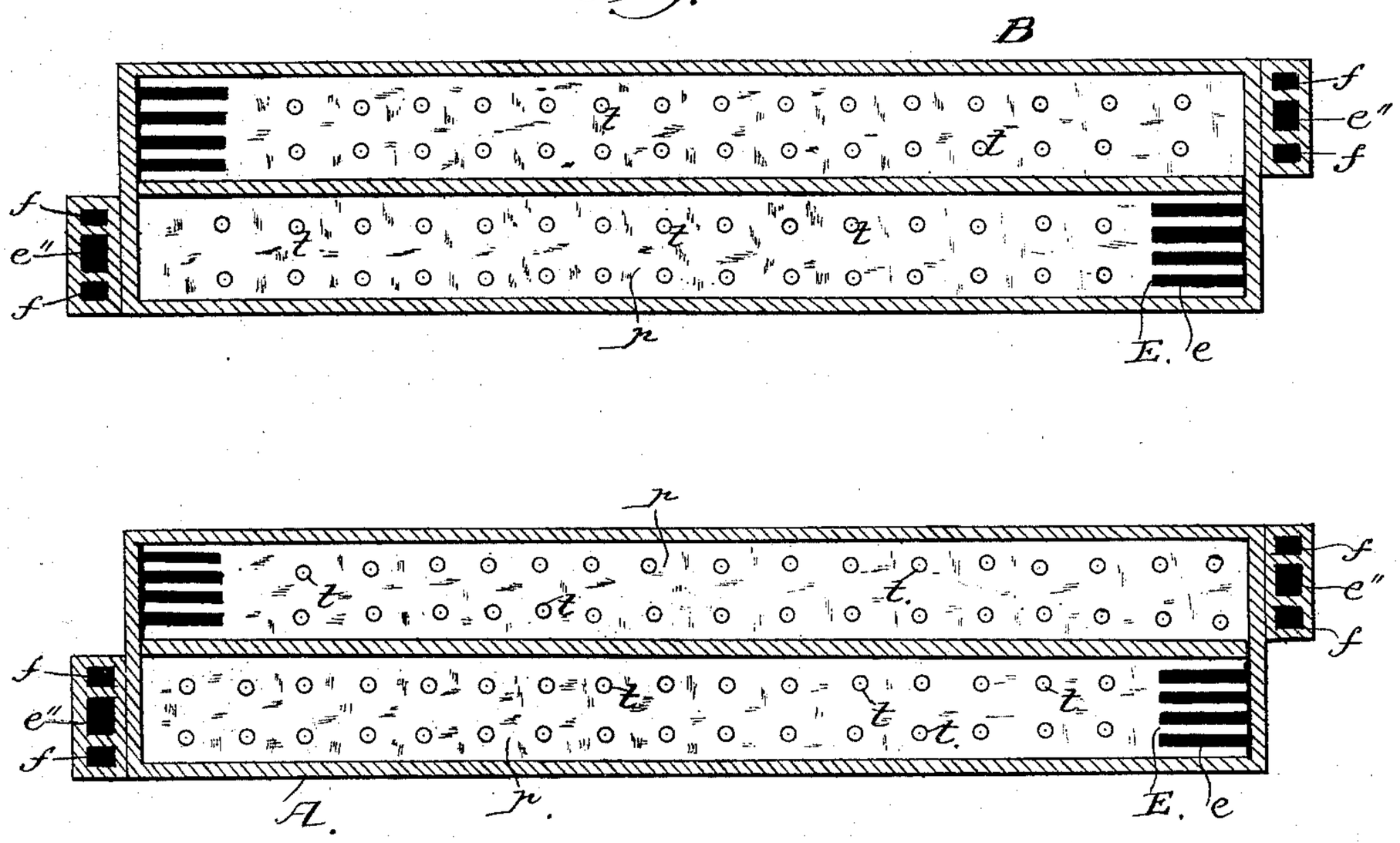
Fig. 1.



Witnesses;
F. Walter Fowler,
R. K. Evans

Inventor;
Henry Tilden
by
A. S. & H. Evans & Co.
Attys.

UNITED STATES PATENT OFFICE.

HENRY TILDEN, OF KELLOGG, IOWA.

DRIER.

SPECIFICATION forming part of Letters Patent No. 232,572, dated September 21, 1880.

Application filed March 5, 1880. (No model.)

To all whom it may concern:

Be it known that I, HENRY TILDEN, of Kellogg, Jasper county, State of Iowa, have invented certain new and useful Improvements in Driers; and I hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a perspective view of my improved dry-house. Fig. 2 is a longitudinal vertical section on line *y y* of Fig. 3. Fig. 3 is a vertical section on line *x x* of Fig. 2. Fig. 4 is a horizontal section on line *z z* of Fig. 2.

The object of my invention is to provide a drying-house which will rapidly and effectually remove all moisture from vegetables, fruits, and cereals for the purpose of desiccating them.

My invention consists in the combination of devices hereinafter described and claimed.

In order that those skilled in the art may make and use my invention, I will proceed to describe the exact manner in which I have carried it out.

In the said drawings, A B illustrate the lower part of my dry-house, constructed of brick, and C D the drying-chambers, which are housed in any desirable manner. Built into the lower portion of the house are a series of sets of furnaces, E F, two of which I will specifically describe, the others all being similarly constructed.

The furnace E extends longitudinally through the lower portion of the house, being provided at one end with a fire-box, *e*, and at the other end with a chimney-flue, *e'*, having a proper stack, *e''*, to give a good draft. The top and bottom of the furnace proper are formed of cast-metal plates *p p'*, which are perforated throughout their extent for the reception of tubes *t*, preferably made of three-quarter-inch gas-pipe, which have their ends open below the bottom plate, *p*, and above the top plate, *p'*. Underneath the furnace is an air-chamber, G, divided by a perforated wall, *g*, and divided from the ash-pit of the furnace by walls 2, and from which the air passes through tubes *t*, being highly heated in its passage, to the drying-chambers above plates *p'*. Adjacent to stacks *e''* are flues *f f*, through which air is forced to air-chambers G by means of blower-fans 3 3, and as the air passes downward it absorbs more or less of the caloric escaping through the stack and utilizes it as it passes through the tubes *t* to the drying-chambers.

I find that the direct action of the fire in the fire-boxes on that portion of plates *p'* (which are usually of cast-iron) adjacent to the fire-boxes, from its intensity, so unequally heats the plates that they soon sag down and break. To obviate this difficulty a small flue, 4, is provided, which opens directly over the furnace and throws, by means of a fan-blower, 5, diagonally and downwardly a blast of air directly upon the highly-heated portions of plates *p'*, thereby keeping them from becoming too highly heated, and at the same time heating the air sufficiently to be utilized in the drying-chamber. This direct heated draft thrown in above plates *p'* serves also to thoroughly stir up and equalize the small currents of heated air which are pouring through tubes *t*.

It will be seen that each furnace of a pair is made to alternate as to the location of the fire-box, the fire-box of one furnace being contiguous to the rear and smoke-flue of the other, as seen in Figs. 3 and 4. By this arrangement of the furnaces end for end there is an equilibrium of temperature kept in the two furnaces, largely due to the radiation from the division-wall, the hottest part of one furnace lying against the coolest part (or part most remote from the fire-box) of the other. The perforated partition *g* enables the air in the air-chambers below the furnaces to keep up a constant circulation to and fro, and consequently tends to keep the air in the two furnaces at a mean temperature to enter pipes *t t*.

Above each pair of furnaces is a drying-chamber, H, in which are drawers or trays *h*, to receive the article to be dried, said chamber terminating in a series of peaked or cone-shaped tops. From the apex of each cone rises a pipe, P, provided with a chamber, 7, for an exhaust-fan, through which to draw the air laden with the moisture from the material to be dried.

The exhaust-fans are preferably all driven from pulleys on a centrally-located shaft, S.

When two series of furnaces are used, as at present illustrated, the pipes P can be inclined toward each other and open into a larger pipe, P', opening into the air.

In arranging the drying pans or drawers I

cover them on the outside by closely-fitting doors, and the lowest tray in each vertical series I make of a much finer mesh than those above, for the reason that, as the hot draft through the drying-chamber keeps the cereals or fruits, if in small particles, in constant motion, the lower fine-mesh tray catches everything that is sifted through and prevents anything from falling on the hot plates of the furnace below.

Any number of sets or pairs of furnaces arranged as set forth may be combined in one drying-house without departing from the spirit of my invention.

Having described my invention, I claim as new and desire to secure by Letters Patent—

1. In a drier, a series of furnaces arranged alongside of each other, end for end, in combination with a subjacent chamber having a perforated partition, *g*, air-tubes *t t*, passing through the furnaces, an air-chamber, H, and superimposed fruit-drying receptacles *h*, all constructed, arranged, and operated as set forth.

2. The flue 4, provided with the blower-fan 5, in combination with and arranged to project a draft of air upon the top plate, *p'*, of the furnace, immediately over the fire-box, substantially as and for the purpose set forth.

HENRY TILDEN.

Attest:
R. K. EVANS,
WM. F. MORSELL.