

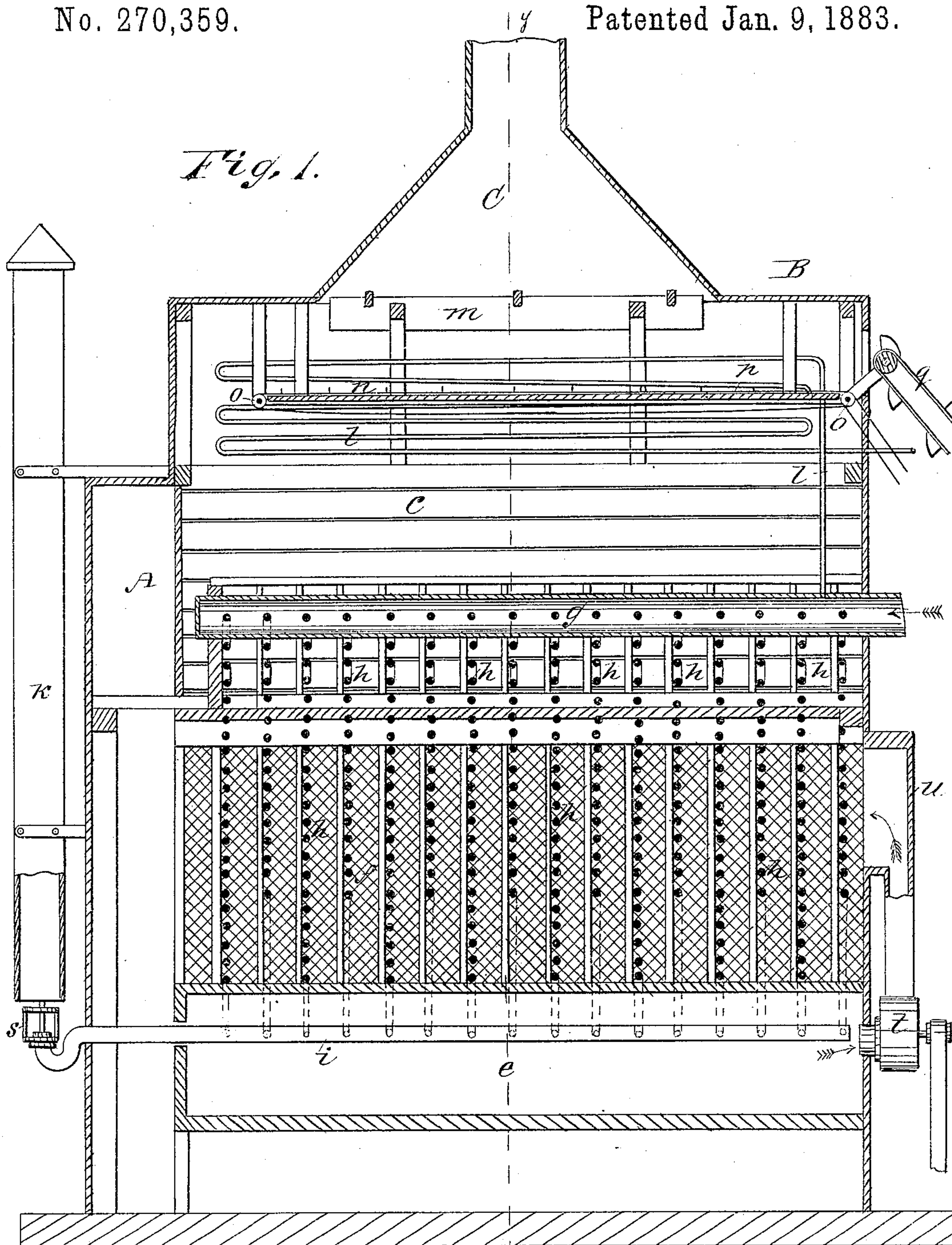
(No Model.)

3 Sheets—Sheet 1.

W. A. ALLEN.  
DRYING HOUSE OR KILN.

No. 270,359.

Patented Jan. 9, 1883.



WITNESSES:

*Thos. G. Hooper*  
*& Sedgwick*

INVENTOR:

*W. A. Allen*  
BY *Mum & Co*  
ATTORNEYS.

(No Model.)

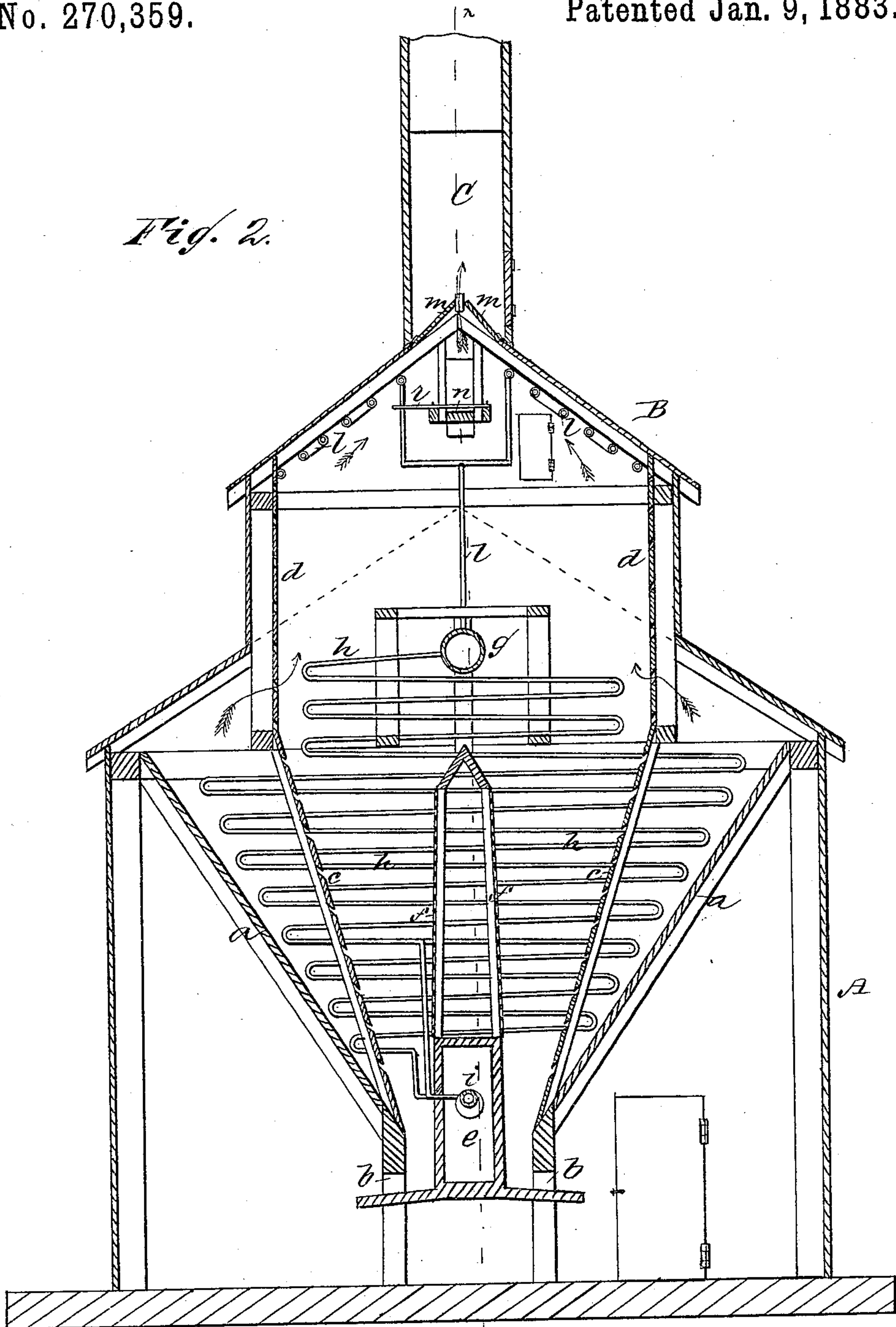
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*Fig. 2.*



WITNESSES:

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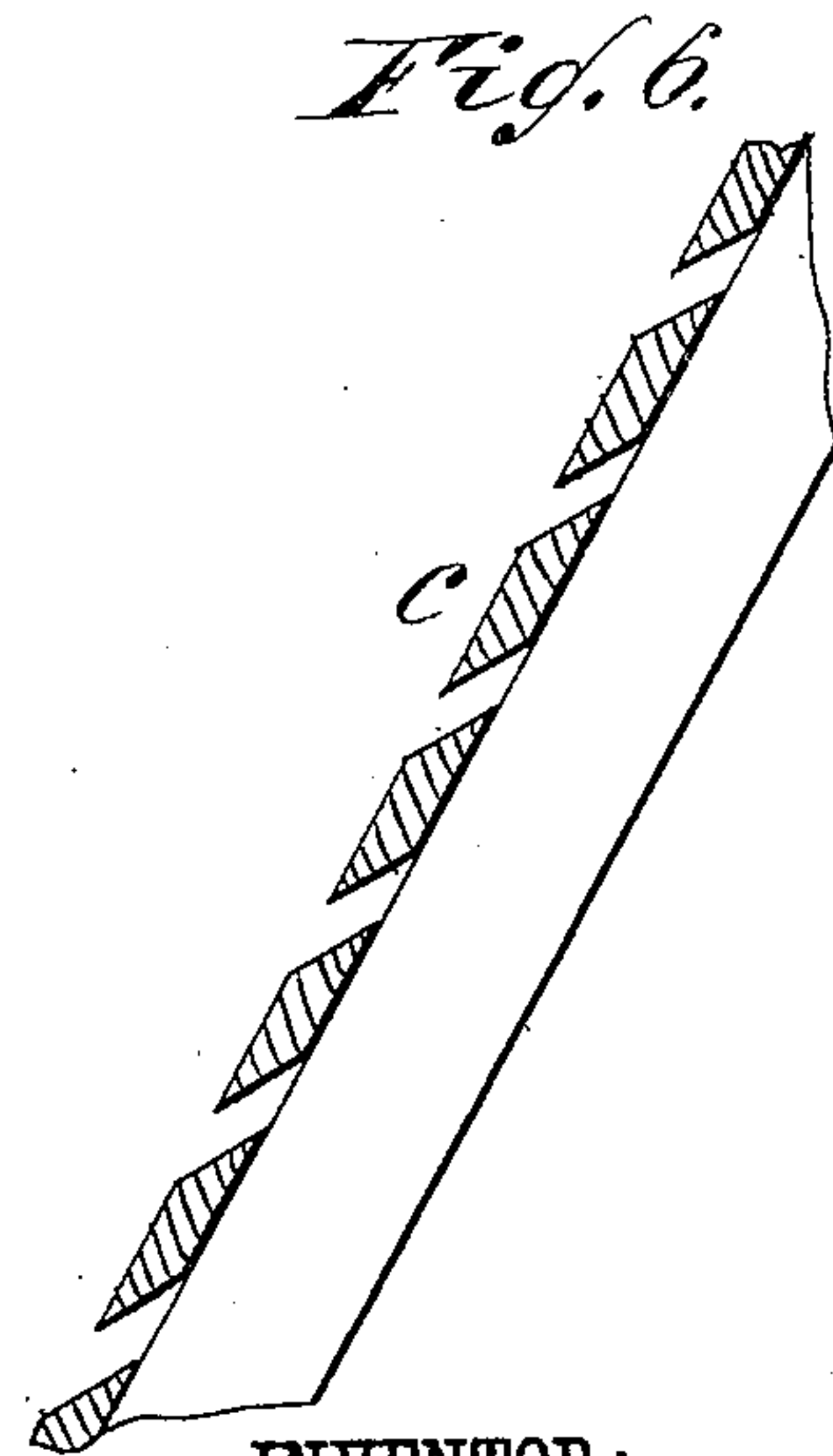
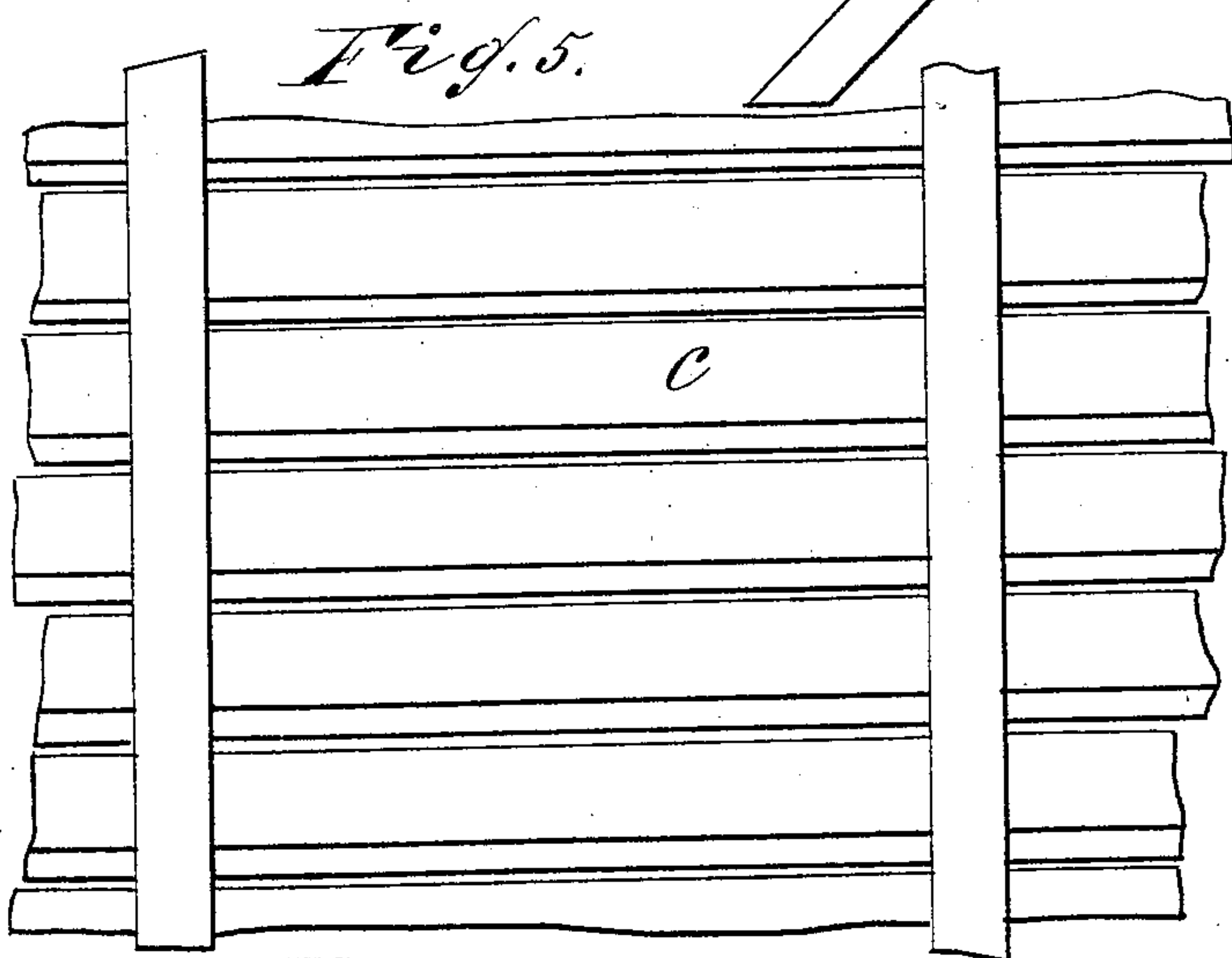
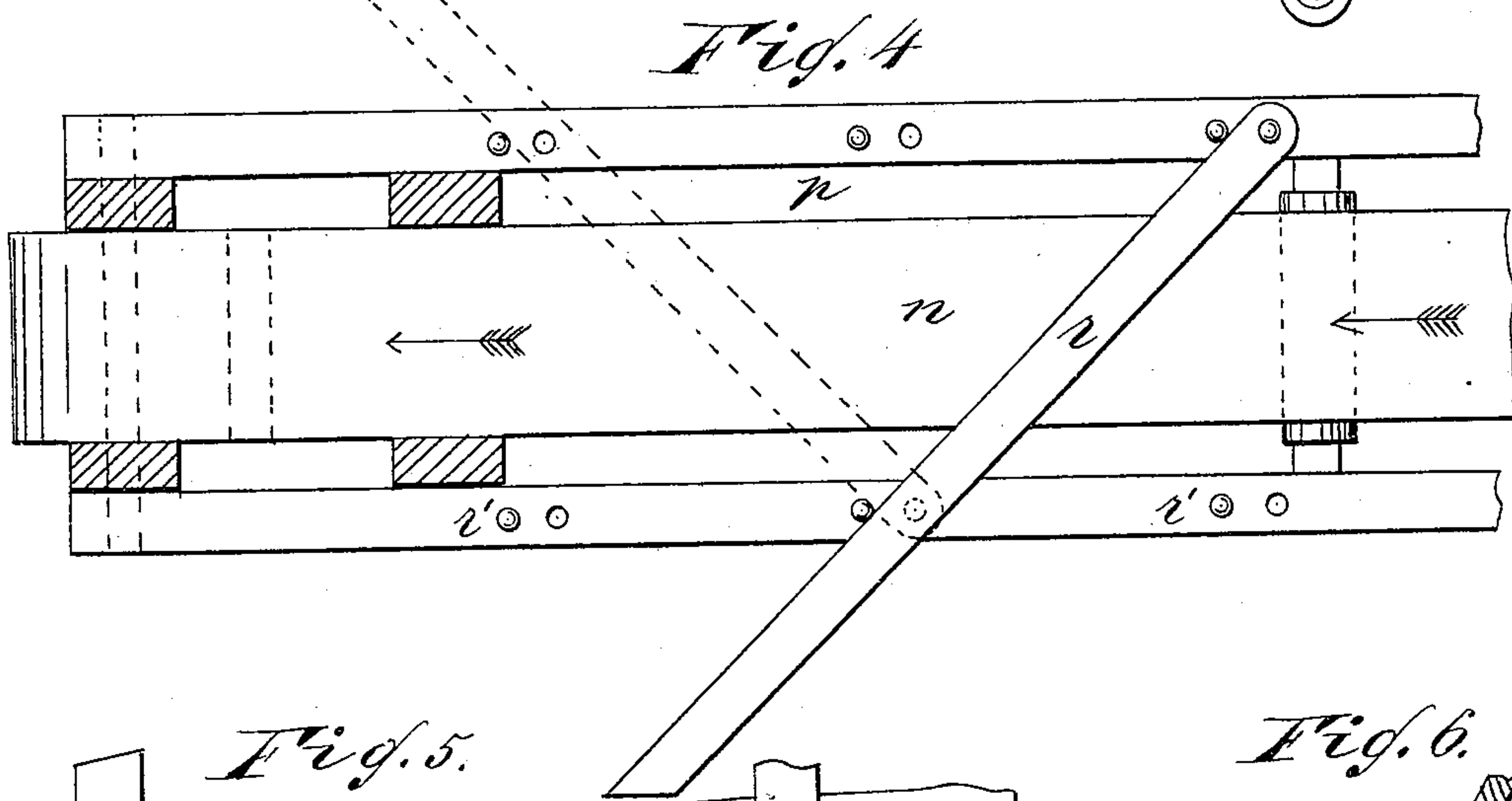
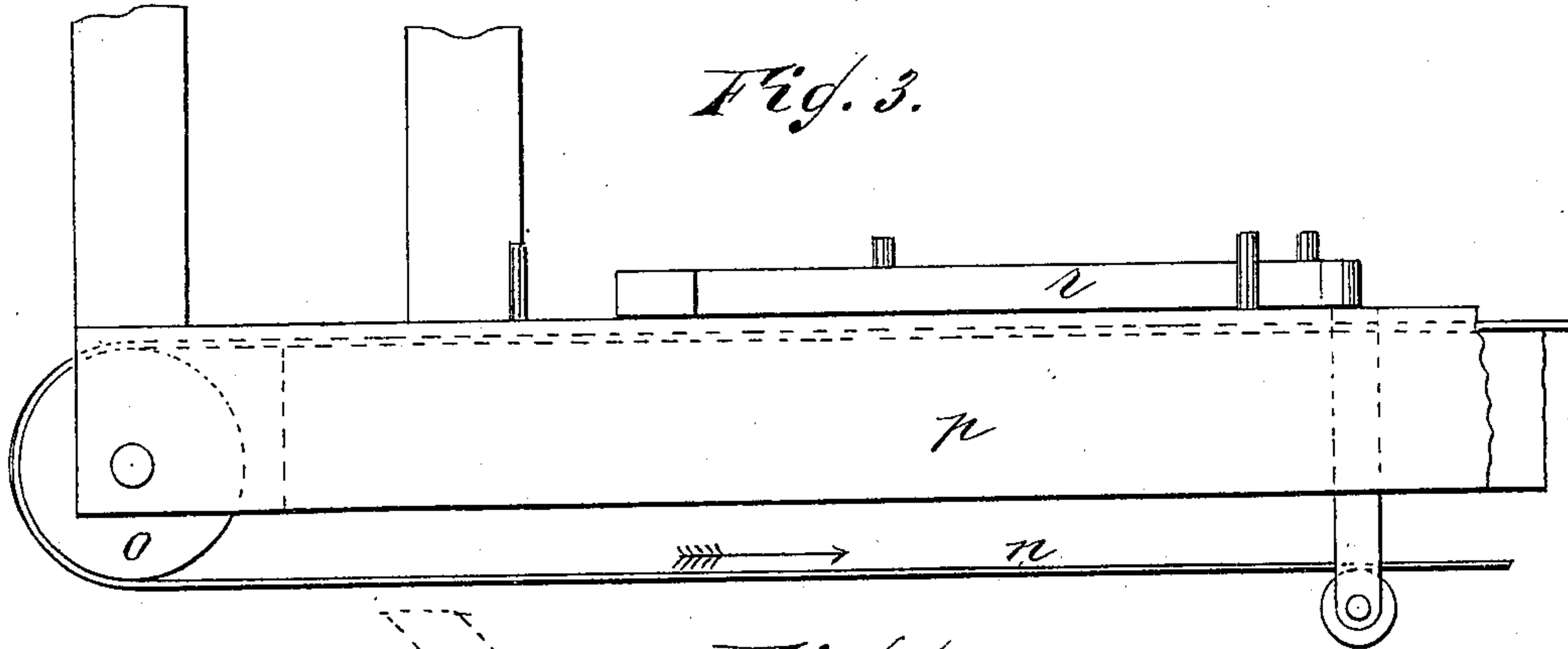
(No Model.)

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W. A. ALLEN.  
DRYING HOUSE OR KILN.

No. 270,359.

Patented Jan. 9, 1883.



WITNESSES:

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# UNITED STATES PATENT OFFICE.

WILLIAM A. ALLEN, OF JERSEY CITY, NEW JERSEY.

## DRYING HOUSE OR KILN.

SPECIFICATION forming part of Letters Patent No. 270,359, dated January 9, 1883.

Application filed November 2, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM A. ALLEN, of Jersey City, in the county of Hudson and State of New Jersey, have invented a new and Improved Drying House or Kiln, of which the following is a full, clear, and exact description.

My improvements relate to kilns for drying kindling-wood material in mass, and particularly the slabs or refuse from saw-mill logs, which, being thoroughly water-soaked when sawed from the log, requires to be thoroughly dried by artificial heat in order to fit it for use. The great difficulty experienced in this work with the kilns heretofore employed has been in getting rid of the moist air or vapors driven off from the mass of material. This condenses rapidly, and unless means are provided for keeping it in a heated and rarefied condition it is a source of great trouble and annoyance.

The object of my invention is to obviate the difficulties named and to insure the proper working of the drying apparatus at all seasons of the year, so that the material may be rapidly and effectually dried.

The invention consists in certain novel features of construction and arrangement, as hereinafter described and claimed, whereby the objects named are attained.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a vertical longitudinal section of my improved drying house or kiln on line *xx* of Fig. 2. Fig. 2 is a vertical transverse section of the same on line *yy* of Fig. 1. Fig. 3 is a detail side view. Fig. 4 is a plan view of the conveying apparatus. Fig. 5 is a face view. Fig. 6 is a section, in larger size, of the perforated walls of the kiln.

The building containing the apparatus may be constructed of any suitable length, width, and height. The side walls and roof are tightly sealed, and the roof is to be constructed with a raised portion, B, from which rises an escape flue or chimney, C. The kiln proper, which is contained in the building A, is constructed as follows:

*a a* are side walls or partitions extending from the center of the main building, and near

the floor, in an inclined direction to the sides of the building near the roof, so as to form a hopper-shaped structure that extends the whole length of the building. At their lower ends these inclined walls *a a* are supported upon frame-work *b*. Interiorly of the walls *a a* are inclined partitions *c*, extending from the supporting-frame *b* to the base of the frame that supports the raised roof B, so that there is a gradually-widening space between these inner walls or sides, *c*, and the outer walls, *a*. The walls *c*, as shown most clearly in Figs. 5 and 6, are constructed of boards attached a short distance apart upon inclined studding, so as to give opportunity for the moist air to escape to the space between the walls *a c*.

Above the walls *c*, within the raised roof B, are similar perforated partitions, *d*, extending to the upper roof of the building. At the bottom of the space inclosed by the walls *c c* is a heating-box, *e*, extending the whole length of the kiln, and upon this box *e*, and extending nearly to the top of the side walls *c*, are partitions *f f*, preferably constructed of open wire-work material, so as to form an inclosed space at the center of the kiln for the heated air to rise in. At the upper part of the building, within the space inclosed by the walls *d d*, is the main steam-supply pipe *g*, extending horizontally the whole length of the inclosed space, and from this pipe smaller steam-pipes *h* extend horizontally back and forth through the space inclosed by the walls *c d* to the bottom thereof, where these steam-pipes connect to a horizontal discharge-pipe, *i*, that is within the box *e*, this pipe *i* extending out through the side of the main building A and connecting with a vertical escape flue or chimney, *k*, at the side thereof. As shown most clearly in Fig. 1, the pipes *h* are arranged in a series at regular intervals apart, and the sections or lengths extend through the side walls or partitions *c c*, so as to enter the space between the walls *a c*.

From the upper side of the supply-pipe *g* a pipe, *l*, extends to the space immediately beneath the raised roof B, and this pipe is extended along closely beneath the roof at each side, the end passing out through the side of the building, as shown in Fig. 1. At the center of the roof B are flaps or shutters *m*, which, being opened, allow escape of the air to the chimney C.



At the upper part of the building is an endless apron or belt, *n*, suspended from hangers, and carried by pulleys *o* at its ends, as shown most clearly in Figs. 3 and 4, above a fixed platform, *p*. An inclined elevator, *q*, at the outside of the building terminates, near one end of the endless belt *n*, through an opening in the side of the building, and this elevator is provided with buckets for bringing the material up and discharging the same upon the apron for its distribution in the space inclosed by the walls *c d*.

At the side of the belt *n* is an arm, *r*, which is pivoted at one end and extends over the belt. The object of this arm is to sweep the material from the belt as it is moved along, and the arm is held in place by a pin, *r'*, at the side of the supporting-frame. By shifting the arm the material is thrown off at the place desired.

In operation the material supplied to the apron *n* falls into and fills the space between the walls *c c* and *d d*, and around the space inclosed by the screens *f f*. By the position and arrangement of the steam-pipes *h* they extend through all parts of the mass of wood thus piled up, so that the heat is equally distributed throughout. The perforated side walls *c* give opportunity for escape of the air and vapors to the space at the side, so that they are free to ascend and enter the open space beneath the raised roof B. The screens *f f* allow the air and vapors to rise from the lower portion of the mass and through the center thereof. In warm weather the vapors and moist air readily pass out at the chimney C; but in cold weather it is necessary to prevent condensation of the vapors, which would rapidly take place in the space above the steam-pipes. The steam-pipes *l* are provided for that purpose, and as they act to keep the space beneath the roof heated the vapors are prevented from becoming condensed, and are kept in a rarefied condition, so that they will readily escape by the chimney. The air contained within the box *e* becomes highly heated by the steam-pipe passing through it, and this heated air is utilized by means of a blower, *t*, placed at one end, which draws the air from the box *e*, and discharges the same by a pipe, *u*, to the upper part of the space inclosed by the screens *f f*, so that any condensation of the vapors rising in this space is thus prevented, and a draft of air created that is sufficient to carry the vapors upward through the mass.

Exhaust-steam is generally used for the

kiln, and in order to insure equal draft and heat throughout the distributing-pipes the escape-pipe *i* is fitted with a lift-valve, *s*, at its discharge end. This, being suitably weighted, remains closed until the pressure of steam is sufficient to fill all the pipes.

By the construction and arrangement of the partitions and steam-pipes, as shown and described, a thorough expulsion of the moisture from the kiln or house is insured, and the rapid and effective drying of the material can be carried out in all weathers.

I do not limit myself to the exact arrangement as described, as it may be varied more or less and still obtain the same effect.

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

1. In drying houses or kilns, the combination of the inner perforated walls, *c c*, forming a receptacle for the material, and the outer closed walls, *a*, within the building A, provided with the raised roof B, substantially as shown and described.

2. In drying-houses, the combination and arrangement, substantially as described, of the steam-supply pipe *g* and the pipes *h* with the perforated walls *c* and outer walls, *a*, forming a receptacle for the reception of the material and space for the escape of the vapors.

3. In drying-houses, the combination of the screens *f f* with the perforated side walls *c c* and outer walls, *a*, substantially as shown and described.

4. In drying-houses, the heating-box *e*, the blower *t*, and pipe *u*, combined with the screens *f f* and side walls *c c c*, substantially as and for the purposes set forth.

5. In drying-houses, the combination, with the inclosing-walls *a a* and perforated side walls *c c*, of the raised roof B, perforated side walls *d d*, and escape flue or chimney C, substantially as shown and described.

6. The combination and arrangement of the endless apron *n* and the pivoted arm *r*, substantially as and for the purposes specified.

7. A drying house or kiln constructed with outer closed walls and inner perforated walls or partitions, and with steam-pipes extending throughout the space inclosed by the inner walls and into the space between the inner and outer walls, substantially as shown and described.

W. A. ALLEN.

Witnesses:

EDW. M. CLARK,  
C. SEDGWICK.