

No. 655,123.

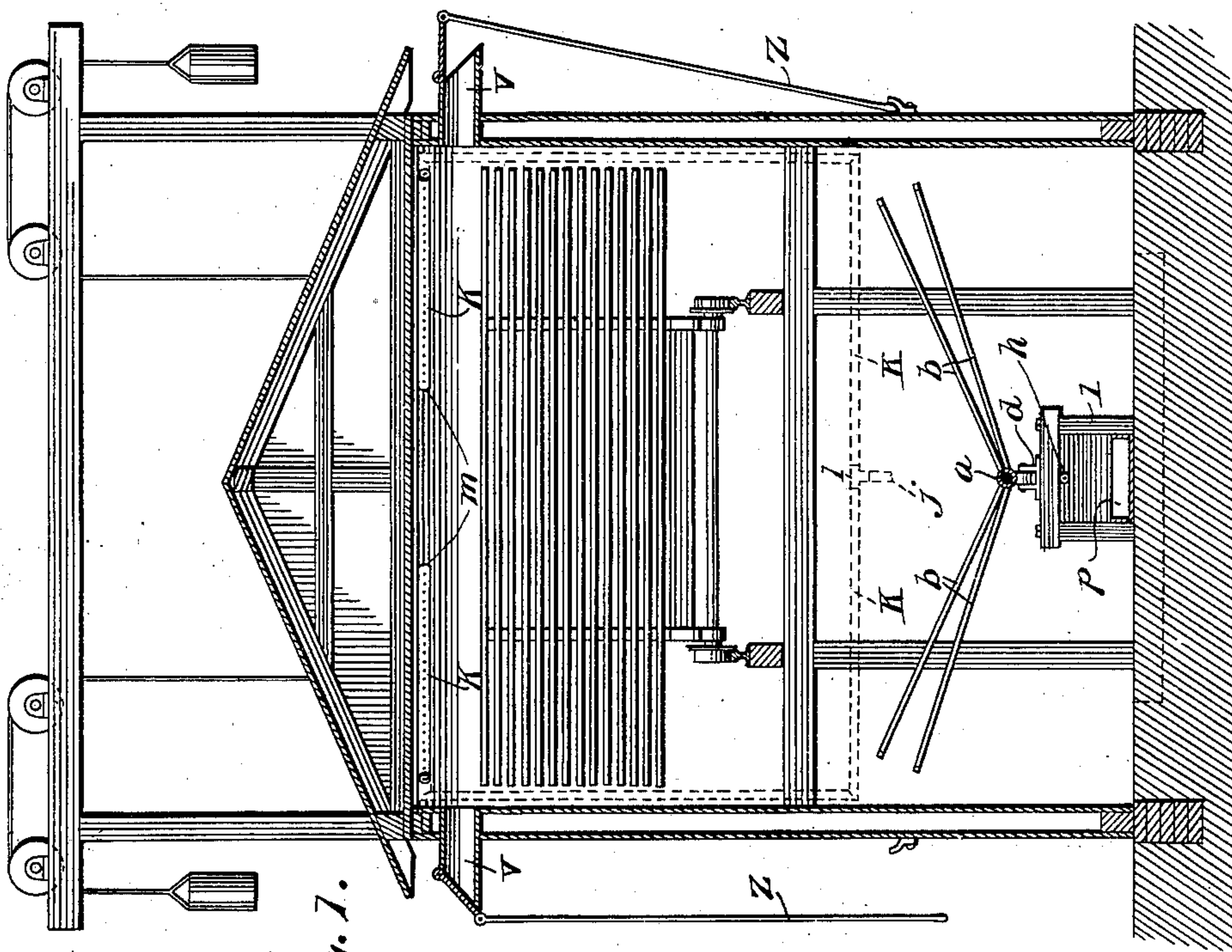
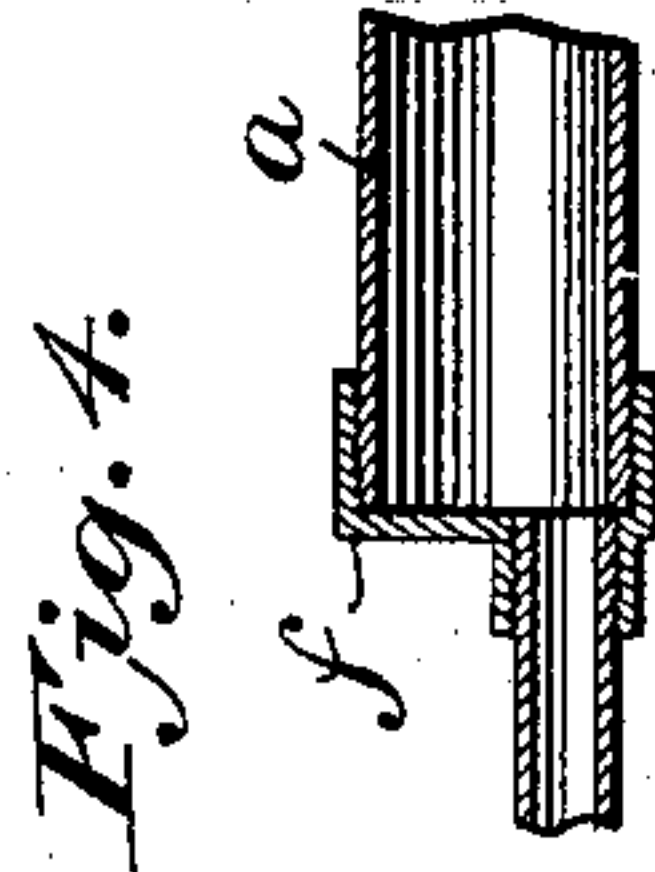
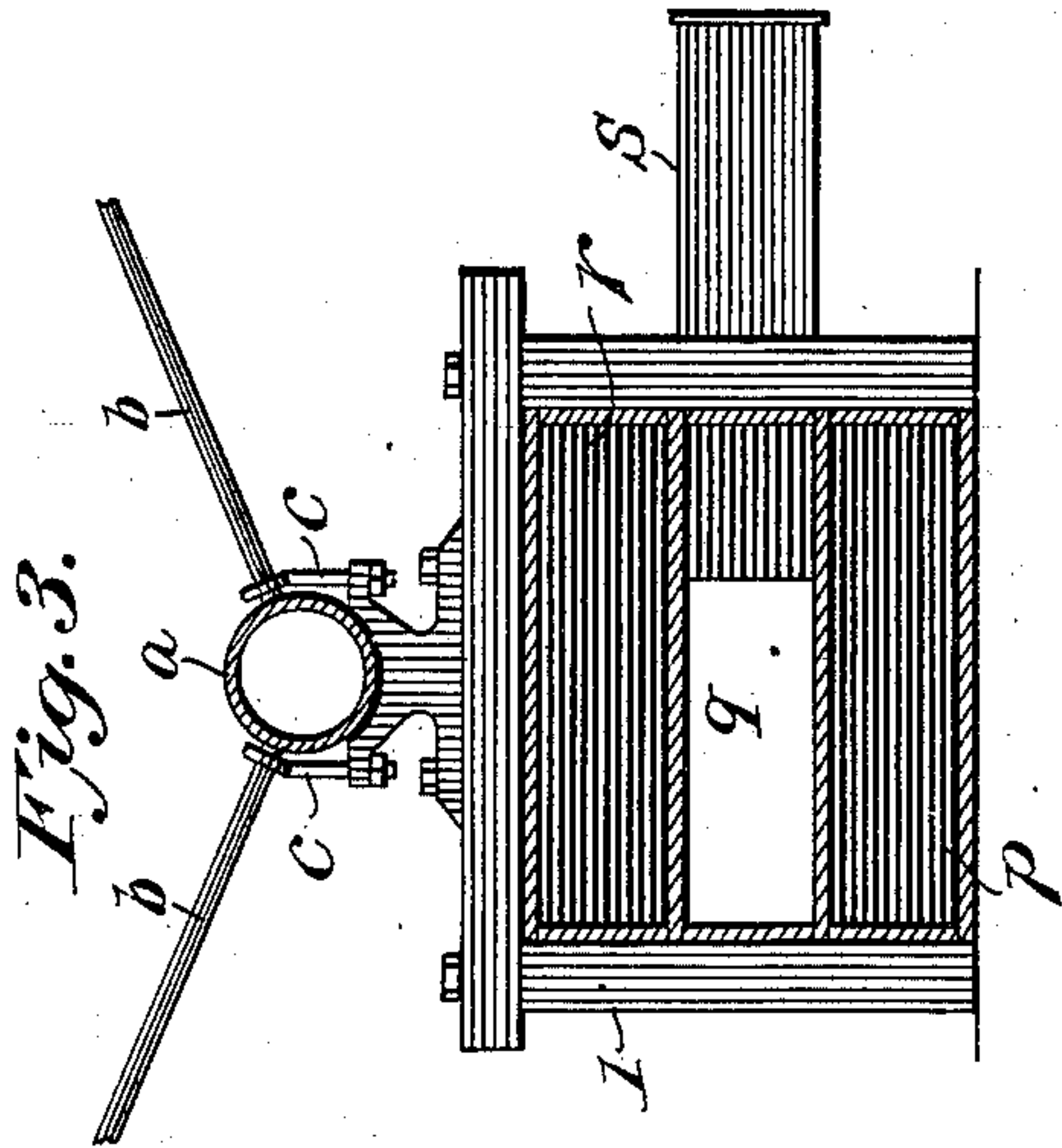
Patented July 31, 1900.

A. H. SIMMS.  
DRY KILN.

(Application filed Feb. 28, 1900.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses  
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Ralph S. Warfield.

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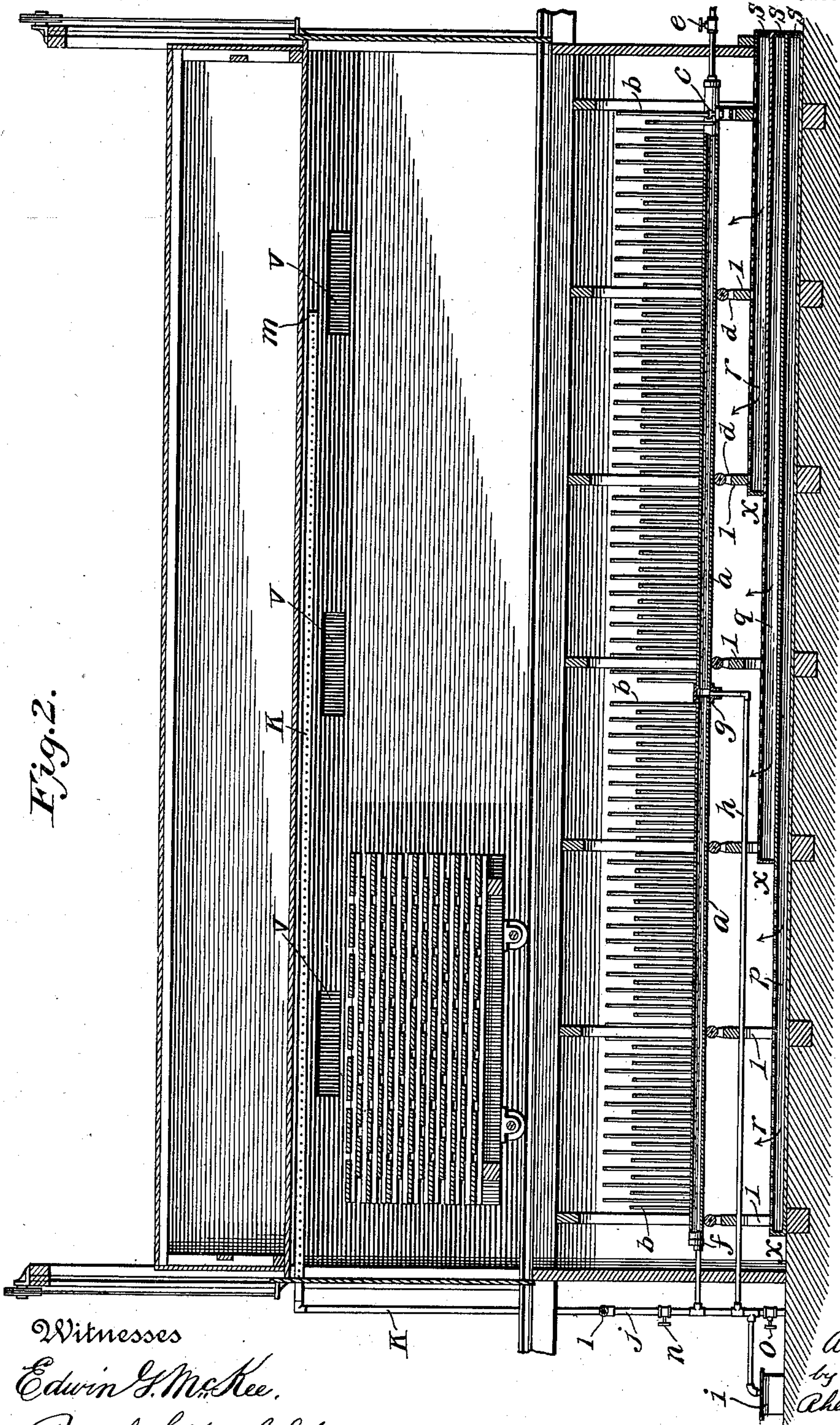
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2 Sheets—Sheet 2.

Fig. 2.



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# UNITED STATES PATENT OFFICE.

ALONZO HENRY SIMMS, OF BIRMINGHAM, ALABAMA.

## DRY-KILN.

SPECIFICATION forming part of Letters Patent No. 655,123, dated July 31, 1900.

Application filed February 28, 1900. Serial No. 6,877. (No model.)

*To all whom it may concern:*

Be it known that I, ALONZO HENRY SIMMS, a citizen of the United States of America, residing at Birmingham, in the county of Jefferson and State of Alabama, have invented certain new and useful Improvements in Dry-Kilns for Lumber and Brick, of which the following is a specification.

My invention relates to an improvement in dry-kilns for lumber and brick.

The object of this invention is to provide improved means for drying lumber and brick by the use of steam through a system of radiating-pipes and air circulation through cold-air ducts and hot-air ventilators; and to this end I regard as of the utmost importance the following: first, the method of fastening the forward end of main header-pipe stationary and permanently with a head-lock and eyebolts and mounting the remainder of this pipe upon concaved rollers, so as to allow for contraction and expansion under different degrees of heat and cold, and, second, the arrangement of the cold-air ducts into three distinct compartments, with corresponding hot-air exits, all so adjusted as to ventilate any portion of the kiln where needed most or all portions simultaneously.

With the foregoing in view my invention consists in certain features of construction and combination of parts, which will be hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a transverse vertical section of my improved kiln. Fig. 2 is a longitudinal section of the same. Fig. 3 is an enlarged detail in end elevation of the cold-air flues and connected parts, and Fig. 4 is an enlarged detail in longitudinal section of one end of pipe *a*.

The heating system consists of a main or central header *a a*, preferably of extra heavy wrought-iron pipe coupled together and of the desired length. This header is drilled with two rows of holes on each side converging outward and slightly upward. Into these holes are screwed the radiating-pipes *b b*, the outer ends of which are closed or capped over. This entire heating system is mounted on one iron head-block with eyebolts at its upper end at *c* and iron concave rollers which turn freely in chair-supports *d d*. By this

system of mounting the difficulties arising from expansion and contraction are completely overcome, as the entire system is free to expand and contract upon the rollers, as above described. The head-block at *c* secures this end of the large pipe permanently, thus forcing the expansion upon the rollers. The steam enters through pipe and valve at *e*, thus filling the entire heating system.

Upon the extreme end of main pipe is fitted an "eccentric" cap *f*—that is, a discharge-cap the outlet of which is on a line with the bottom of main *a*. By this means all the water of condensation will be discharged without accumulation in main *a* to prevent obstructing free circulation of steam in radiating-pipes *b b*. In long systems (eighty feet and more) an intermediate discharge-opening is put in at *g*, the object of which is to carry off all condensation in the first half of system through an independent pipe *h*. This insures dry steam in lower half of system the same as first half. At the extreme end of kiln all drain-pipes come together, as shown, and discharge into trap *i*. At the point *j*, Fig. 2, the discharge-pipe is extended upward to *l*, where a T is used, separating the supply-pipe right and left into branches *k k k* upward at sides of kiln, thence inward and over head-ceiling to a point *m* far along to the front and converging to center of ceiling. These pipes are closed at extreme end at *m* and are perforated with holes full length of ceiling-pipes. This system of pipes serves as a fire-extinguisher, and by opening the stop-valve at *n* the contents, both steam and water, is discharged in kiln-room through perforated pipes *k*. By opening valve *o* the entire system is thoroughly drained.

The proper circulation of cold and hot air is found to be of the greatest importance in drying both lumber and brick. My system in this regard is very superior, and I wish to call particular attention to it.

The cold-air inlet preferably runs longitudinally through center of kiln-room and directly underneath the main header-pipe, thus making it impossible for air to get to the lumber or bricks above without first passing through the radiating-pipes and being heated. This cold-air flue is divided into three independent compartments, as shown by *p*, *q*, and



7, closed at their inner end *x x x* and each having an independent door or shutter *s s s*. The top flue communicates with the first third of kiln through its slotted open top, as shown by the arrows at *r*, the middle flue with the middle third, and the bottom flue with the last third, of kiln. By this means it is evident that any portion of the kiln can be given a cold-air draft entirely independent of other portions. The hot-air or vapor exits *v v* are located in the side walls of the kiln near the ceiling, each having a flap damper to be opened and closed by rod, as shown at *z* in Fig. 1.

15 In operation it is evident that if it is desirable to thoroughly ventilate the rear end of kiln shown at *w w* by opening air-flue *p*, and also opening the two hot-air outlets directly over this portion of the kiln, a strong current of air will be established through *p* upward through heating system and out at the ventilators, while the remaining portion of the kiln will still be dormant or very nearly so. These same conditions can be established in any other portion of the kiln by the same methods.

The timbers *l l l l* subserve the double purpose of supporting the chairs and expansion-rollers, which carry the entire heating system, and also a frame in which the cold-air flues are built up.

It is evident that slight changes might be resorted to in form and arrangement of the several parts described without departing from the spirit and scope of my invention, and hence I do not wish to limit myself to the exact construction herein set forth; but,

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

1. In a kiln, the combination with a heating-pipe, of a cold-air flue beneath the pipe, said flue subdivided into two or more independent chambers, these chambers superimposed one above the other and extending successively one beyond another.

2. In a kiln, the combination with a main header-pipe carrying a series of radiating-pipes, of a cold-air flue beneath the header, said flue subdivided into two or more independent chambers, these chambers superimposed one above another and extending successively one beyond another.

3. In a kiln, the combination with a header carrying a series of radiating-pipes and mounted or supported throughout its length upon

antifriction-bearings, of bolts hooked over certain of the radiating-pipes for securely fastening the header in place at that point while expansion and contraction takes place throughout the remainder of the length of the header upon the antifriction-bearings which support it.

4. In a kiln, a cold-air flue composed of two or more superimposed compartments, one extending beyond the next one above and said compartments perforated on their upper surfaces, and doors or shutters at the outer end of each flue-compartment for the regulation of the air-supply therein.

5. The combination with a suitable support, of a header thereon, said header carrying radiating-pipes, and eyebolts secured to certain of the radiating-pipes for securing the header at one end upon its support, and rollers upon which the header rests.

6. In a kiln, the combination with a main header-pipe and radiating-pipes extending therefrom, of cold-air ducts extending from a common point divided into separate compartments for discharging at different points immediately beneath said header-pipe, valves for these compartments and hot-air dampers at the upper end of the kiln for the discharge of heated air therefrom.

7. In a kiln, the combination with a main header-pipe, of cold-air ducts extending in proximity thereto, said ducts of varying lengths and perforated for the escape of air, and extending to a common point, and valves for the outer ends of these ducts.

8. In a kiln, the combination with a header wholly located within the kiln and supported upon antifriction-bearings throughout its length, and sets of inclining, diverging radiating-pipes extending from each side of the header-pipe which balance the latter axially upon the bearings, of means located at one end for rigidly securing it in place, and a steam-pipe passing from the exterior into the kiln and discharging into the header in close proximity to the point where the header is secured, whereby no strain is felt upon the wall of the kiln due to expansion and contraction of the header.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

ALONZO HENRY SIMMS.

In presence of—

JOHN W. PERKINS,  
THOS. SIMMS.