

No. 845,047.

PATENTED FEB. 26, 1907.

J. BEERNINK.
AIR BLAST DRIER.
APPLICATION FILED JULY 31, 1901.

Fig. 1.

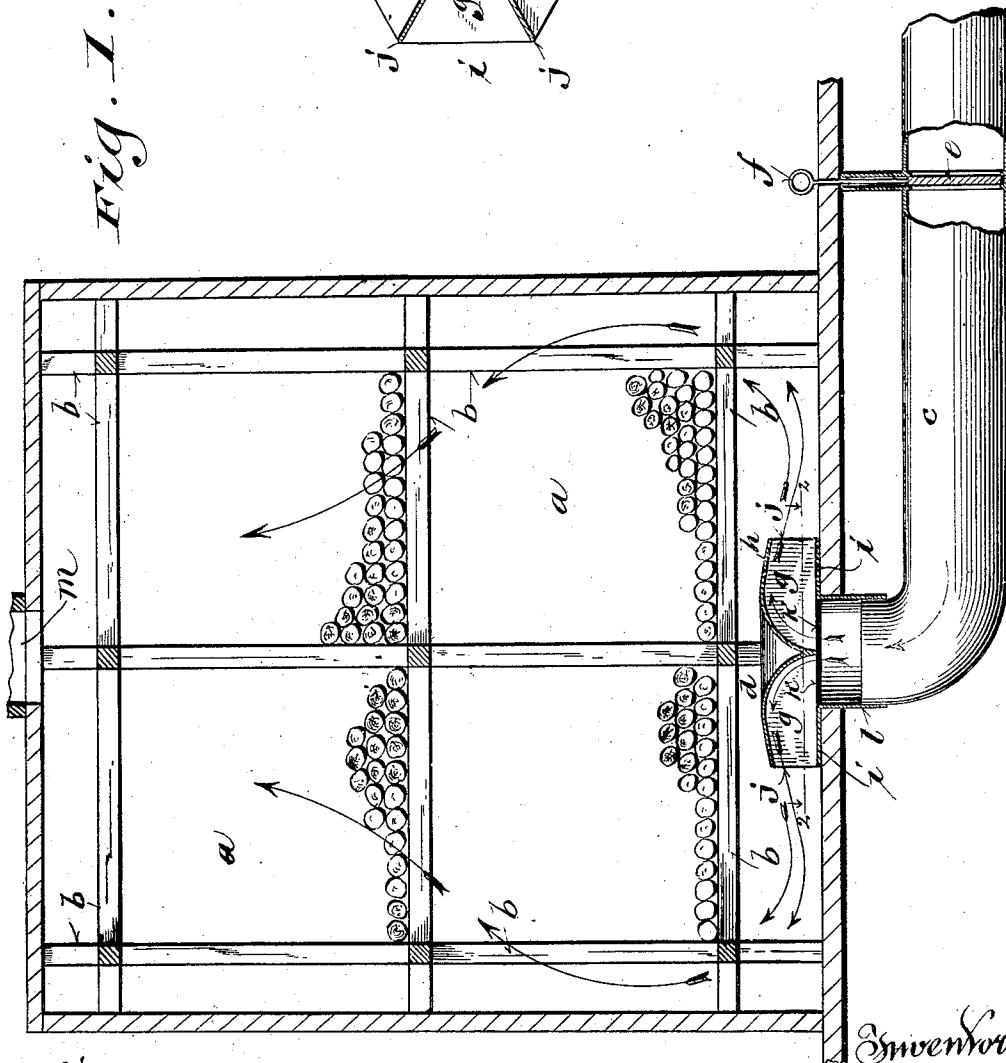
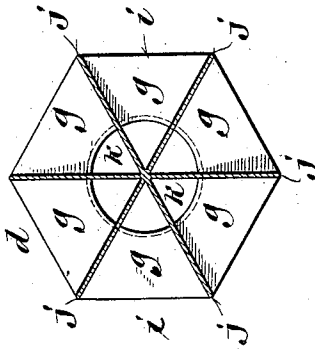


Fig. 2.



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AIR-BLAST DRIER.

No. 845,047.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOHN BEERNINK, a citizen of the United States, residing at Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain new and useful Improvements in Air-Blast Driers, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

My invention relates to kilns, dry-houses, or drying-rooms for seasoning or drying lumber, leather, &c., by means of an air-blast introduced into the lower part of the drying-room. Its main object is to spread and distribute the air-blast as it enters the room, and thereby cause it to act evenly on material in all parts of the room.

It consists in certain novel features of construction and in the arrangement and combinations of parts, as hereinafter particularly described, and pointed out in the claims.

In the accompanying drawings like letters designate the same parts in both figures.

Figure 1 is a vertical section of the air-distributing device in connection with a blast-pipe and drying-room; and Fig. 2 is a horizontal section on the line 2 2, Fig. 1, of the distributing device by itself.

Referring to Fig. 1, *a* designates a drying-room inclosed by suitably-constructed walls and provided with racks *b* or other suitable supports for the material to be seasoned or dried. An outlet flue or opening *m* is provided in the usual or any suitable way for discharging at or near the top of the room the air which is forced into it at or near the bottom, and thus causing an upward current of air by which the moisture expelled from the drying material is carried away, as indicated by arrows.

c is a blast-pipe through which hot or warm air is forced into the drying-room. It is preferably arranged below the floor of the drying-room and is bent upwardly at its discharging end to connect with the under side of the distributing device *d*, which is preferably centrally located on the floor of the drying-room, as shown in Fig. 1.

The blast-pipe is provided with a slide or valve *e*, having a stem or handle *f* or other operating connection accessible at some convenient point for cutting off and regulating the air-blast.

The distributing device *d*, which may be constructed of sheet metal or other suitable

material, consists of radially-arranged and outwardly-flaring ducts *g g*, formed by top and bottom plates *h* and *i* and radiating partitions *j*. The bottom plate is formed with a central opening *k* and provided around said opening with a downwardly-extending flange or collar *l*, with which the blast-pipe *c* is connected, as shown in Fig. 1. The top and bottom plates *h* and *i* are preferably made of polygonal or circular form, and the top plate *h* or the sector-shaped sections of which it is composed are curved downwardly toward the center of the opening *k* and are preferably described by radii corresponding approximately with the radius of the opening *k*. At their outer larger ends the ducts *g g* communicate with the drying-room through vertically-disposed outlet-openings, and the top plate *h* or the sections of which it is composed are preferably inclined downwardly more or less toward the outlet-openings, as shown in Fig. 1, to give a downward direction to the air-blast entering the drying-room, as indicated by arrows on Fig. 1.

Heretofore in the construction of air-blast driers it has been customary to make the blast-pipe open directly into the drying-room, and the result of this arrangement has been that the material in certain parts of the room subjected to the full force of the hot-air blast directly upon its entering the room is too quickly seasoned or dried, while material in other parts of the room is affected very little or not at all. Thus in drying lumber the lumber placed directly over or close to the discharge end of the blast-pipe is dried so rapidly at the surface that it is checked and injured, while the lumber in the outer and lower parts of the room, which the upwardly-directed air-blast does not reach, is dried very slowly or but little affected.

With my improved distributing device applied to the discharge end of the blast-pipe as herein shown and described the air-blast as it issues upwardly through the opening *k* is distributed and spread through the outwardly-flaring ducts *g g* and directed therefrom, as indicated by the arrows on Fig. 1, outwardly in all directions along the bottom toward the sides of the drying-room. In this way the material placed nearest the discharge end of the blast-pipe is protected against the full force of the air-blast as it issues from the blast-pipe *c*, and too rapid drying and consequent injury thereof are avoided, while the material in all parts of

the drying-room is subjected alike to an evenly-tempered and uniformly-distributed current of air.

Various changes in minor details of construction and in the adaptation and arrangement of component parts of the apparatus may be made without departing from the spirit and intended scope of my invention.

I claim—

10 1. In an air-blast drier the combination with a blast-pipe, of a distributing device connected on the under side with said pipe and comprising a number of outwardly-flaring ducts separated from each other by
15 partitions radiating from the center of the discharge-opening of said blast-pipe and extending downward at their inner ends to the plane of said opening, substantially as described.

20 2. In an air-blast drier the combination with a blast-pipe, of a distributing device connected on the under side with said pipe and comprising a number of outwardly-flaring ducts separated from each other by
25 radiating partitions, and having their tops curved downwardly at the inner ends toward the center of the discharge-opening from said blast-pipe, substantially as described.

30 3. In an air-blast drier the combination with a blast-pipe, of a distributing device connected on the under side with said pipe and comprising a number of outwardly-flaring ducts separated from each other by
35 partitions which radiate from the center of the discharge-opening of the blast-pipe and extend downward at their inner ends to the plane of said opening, the tops of said ducts being curved downwardly at their inner
40 ends toward the center of the blast-pipe, substantially as described.

4. The combination with the blast-pipe of

an air-blast drier, of a distributing device connected on the under side with the discharge end of the blast-pipe and consisting
45 of outwardly-flaring ducts formed by top and bottom plates and partitions radiating from the center of the blast-pipe, the top plate being curved downwardly toward the center of the opening in the bottom plate through
50 which said ducts communicate with the blast-pipe, substantially as described.

5. A distributing device for air-blast driers consisting of outwardly-flaring ducts formed by top and bottom plates and by par-
55 titions which radiate from the center of the opening in the bottom plate and extend downward at their inner ends to the plane of said opening, the several ducts having vertically-disposed outlet-openings at their
60 outer ends, and the top plate being imperforate and inclined downwardly toward its margin, substantially as described.

6. A distributing device for air-blast driers consisting of outwardly-flaring ducts
65 formed by horizontally-disposed top and bottom plates and vertically-disposed radiating partitions meeting at the center of an opening in the bottom plate and dividing said opening into sector-shaped openings
70 communicating with the inner ends of the several ducts which have outlet-openings at their outer larger ends, the top plate being curved downward at the center toward the opening in the bottom plate and inclined
75 downward toward its margin, substantially as described.

In witness whereof I hereto affix my signature in presence of two witnesses.

JOHN BEERNINK.

Witnesses:

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