

(No Model.)

J. H. PRICHARD.
Drier.

No. 232,544.

Patented Sept. 21, 1880.

Fig. 1.

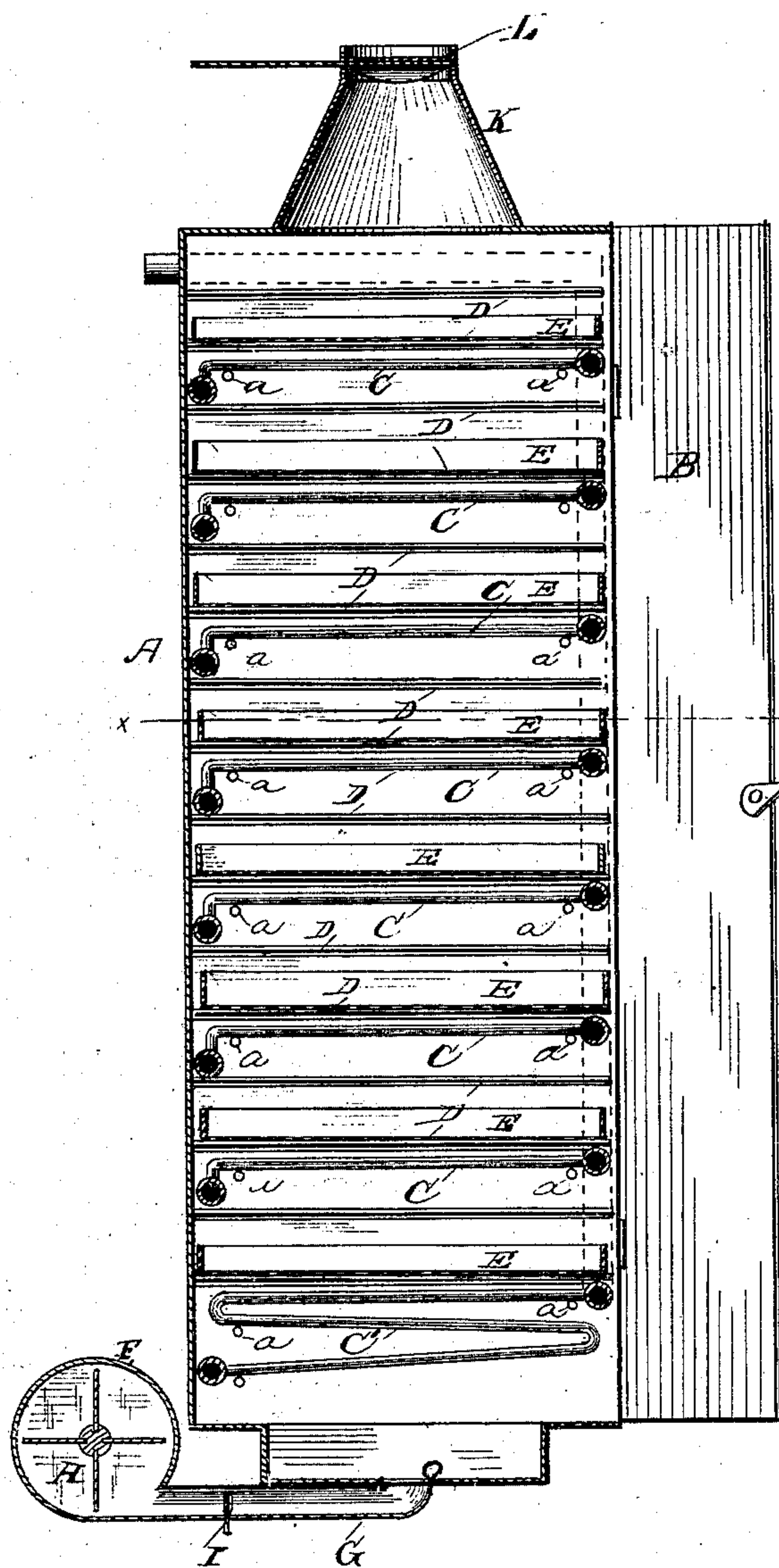
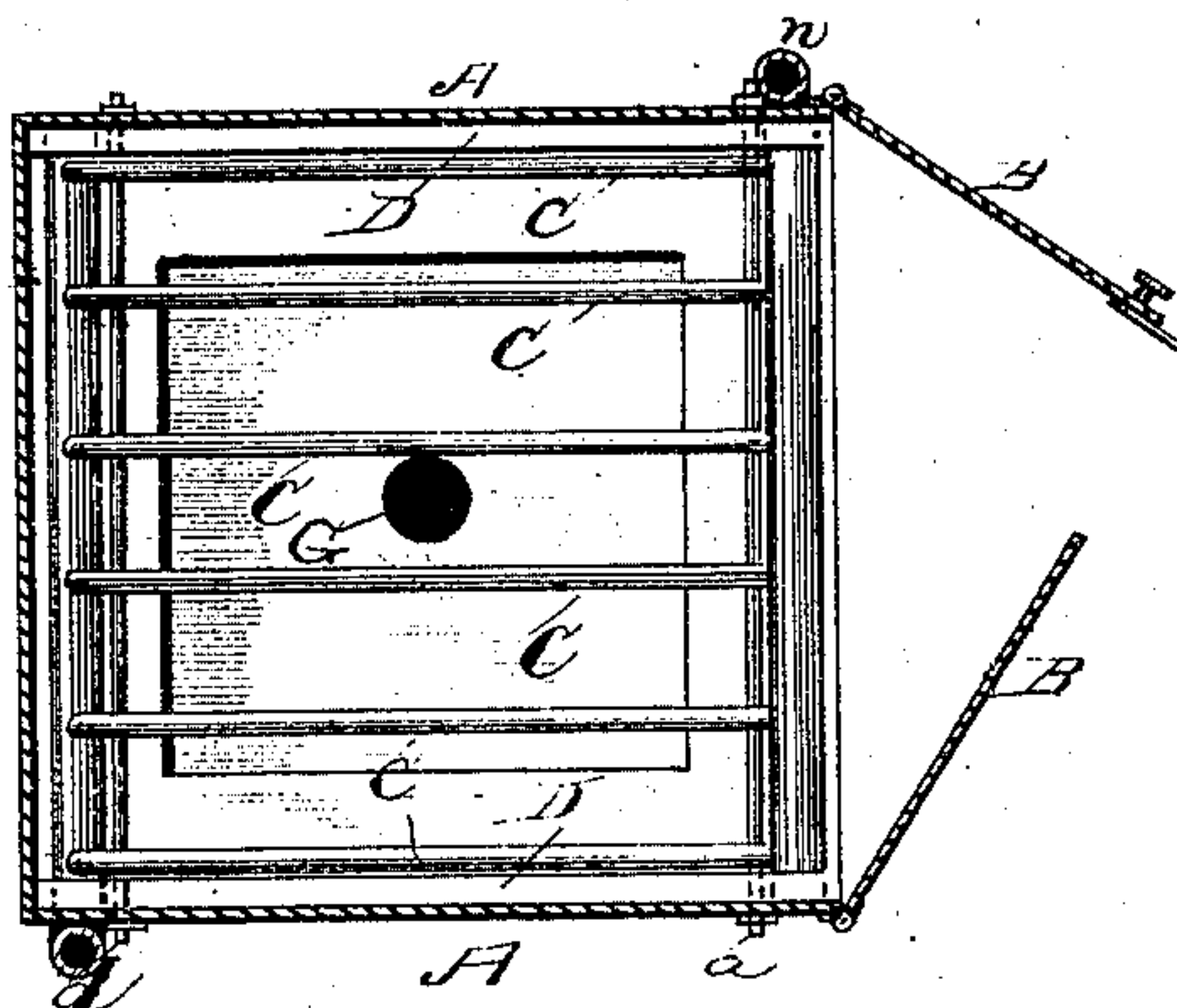


Fig. 2.



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UNITED STATES PATENT OFFICE.

JOSEPH H. PRICHARD, OF PETERSBURG, VIRGINIA, ASSIGNOR OF TWO-THIRDS OF HIS RIGHT TO JOHN Q. JACKSON AND CHARLES A. JACKSON, OF SAME PLACE, ONE-THIRD TO EACH.

DRIER.

SPECIFICATION forming part of Letters Patent No. 232,544, dated September 21, 1880.

Application filed March 13, 1880. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH H. PRICHARD, of Petersburg, Dinwiddie county, Virginia, have invented a certain new and Improved Drier; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a longitudinal vertical section of my improved drier, and Fig. 2 is a horizontal section of the same, taken on the line *xx*, Fig. 1.

Similar letters of reference in the several figures denote the same parts.

My invention relates to improvements in driers for tobacco, fruit, and other materials; and it consists of a vertical metallic casing with doors and a series of nearly horizontal tiers of steam-pipes arranged at intervals across the casing, between which the trays containing the articles to be dried are slid on ways, each of the tiers of steam-pipes communicating directly with a vertical steam-supply pipe outside the casing and connected with a steam-boiler, and each of the tiers of steam-pipes also directly communicating on the opposite side of the casing with a common discharge-pipe for the steam and water of condensation, thus introducing a separate hot current of fresh steam through each tier of pipes, and discharging the same through a common discharge-pipe for the purpose of rapidly drying the material and heating the air forced upwardly through the casing and out of its top by a fan, as hereinafter more fully set forth.

In the drawings, A represents the vertical casing of the drier, provided with hinged doors B B. Within the casing A and at suitable distances apart are arranged tiers of steam-pipes formed of longitudinal and cross-pipes C. Each of these tiers of steam-pipes C communicates directly with the vertical supply-pipe *n* on the outside of the casing, which pipe is connected with a steam-boiler, so that a fresh current of steam is constantly forced through each tier of pipes separately, thus much more effectually heating the air and drying the material than if a single current of steam were forced to circulate through the dif-

ferent tiers, as in devices for drying heretofore employed.

The steam, after being forced in separate currents through each tier of pipes, is discharged through the vertical pipe *d*, on the outside of the casing and communicating with each tier.

A slight inclination is given the tiers of steam-pipes toward the vertical discharge-pipe, as seen in the drawings, so that the water of condensation will run into the discharge-pipe, and thence out of it through a small hole in its lower end.

Cross-rods *a* are preferably placed below the pipes for the purpose of assisting in supporting the steam-pipes, in addition to strengthening and staying the walls of the casing. Suitable guides D D are affixed to the side walls of the casing between the tiers of pipes, and in such guides removable trays or shelves E E are adapted to slide. The trays E E are preferably made of metal frames, with bottoms of wire-cloth or perforated metal, that will readily admit of the passage of air-currents.

At the bottom of the casing there is an air-duct, G, leading from a fan, H, to an orifice, O, in the bottom of the casing, where the air from the blower in the case F is highly heated by the coil C' in the lower part of the casing before it comes in contact with the articles to be dried, the coil C' forming a part of the coil C; and a damper or valve, I, is provided in said duct for regulating the pressure of the inflowing air. An escape-pipe, K, is provided at the top of the casing, and has a valve, L, by which the escape or discharge of the hot air and vapor is regulated.

Steam may be supplied to the pipes in any suitable manner.

The drier thus constructed is, as before stated, adapted to the drying of tobacco, fruit, &c.; but the special use to which I intend to apply it is in the treatment of dipped sweetened tobacco. The tobacco is placed in the trays, the latter inserted in the guides in the casing between the tiers of steam-pipes, and the doors of the casing closed. The blower is then set in motion, causing a current of air to be forced up through the alternately-arranged trays and steam-pipes. There being pipes on

both sides of each tray, the heat applied to the material on each one is uniform and of substantially the same degree throughout the entire apparatus, while the pressure produced by the blower gives the requisite circulation and carries off and discharges the air and vapors through the opening at the top of the case.

I am well aware that driers have been constructed in which air has been forced through a large steam-coil at the bottom of the drier, and thence through a series of trays above containing the material to be dried, and I therefore lay no claim to such invention.

I am also aware that a drier in which a series of tiers of steam-pipes are arranged across a casing, with the material to be dried placed between them, has heretofore been employed, and I therefore lay no claim to such construction, broadly, which differs from my invention in that I introduce into each tier of pipes a separate current of fresh steam from the boiler; and I am also aware of the patent of A. & E. Lister for evaporating liquors for the manufacture of glue, dated June 8, 1880, No. 228,542, and I therefore lay no claim to such invention, in which, while separate currents of fresh steam are introduced into the tiers of pipes from one pipe and discharged therefrom through a com-

mon discharge-pipe, the tiers of pipes are not inclined to carry off the water of condensation to the common discharge-pipe; nor is the latter provided with an opening in its bottom for the discharge of the water of condensation; nor are the series of tiers of pipes, as in my invention, arranged substantially in horizontal planes to radiate the heat on the material to be dried, but are arranged vertically; nor is a blower nor trays for the material to be dried employed, as in my invention.

I claim as my invention—

In a drier, the combination, with the casing A and tiers of inclined steam-pipes C, arranged across it in parallel planes slightly inclined from the horizontal, of the vertical supply-pipe *n*, communicating directly with each tier of pipes, and each tier communicating directly with the pipe *d*, for discharging the steam and water of condensation, trays E, fan-case F, blower H, and duct G, the whole arranged, constructed, and operated in the manner and for the purpose set forth.

JOS. H. PRICHARD.

Witnesses:

ALEXANDER DONNAN,
ALEX. DONNAN, Jr.