

(No Model.)

2 Sheets—Sheet 1.

P. C. VOGELLUS.
DRIER.

No. 543,912.

Patented Aug. 6, 1895.

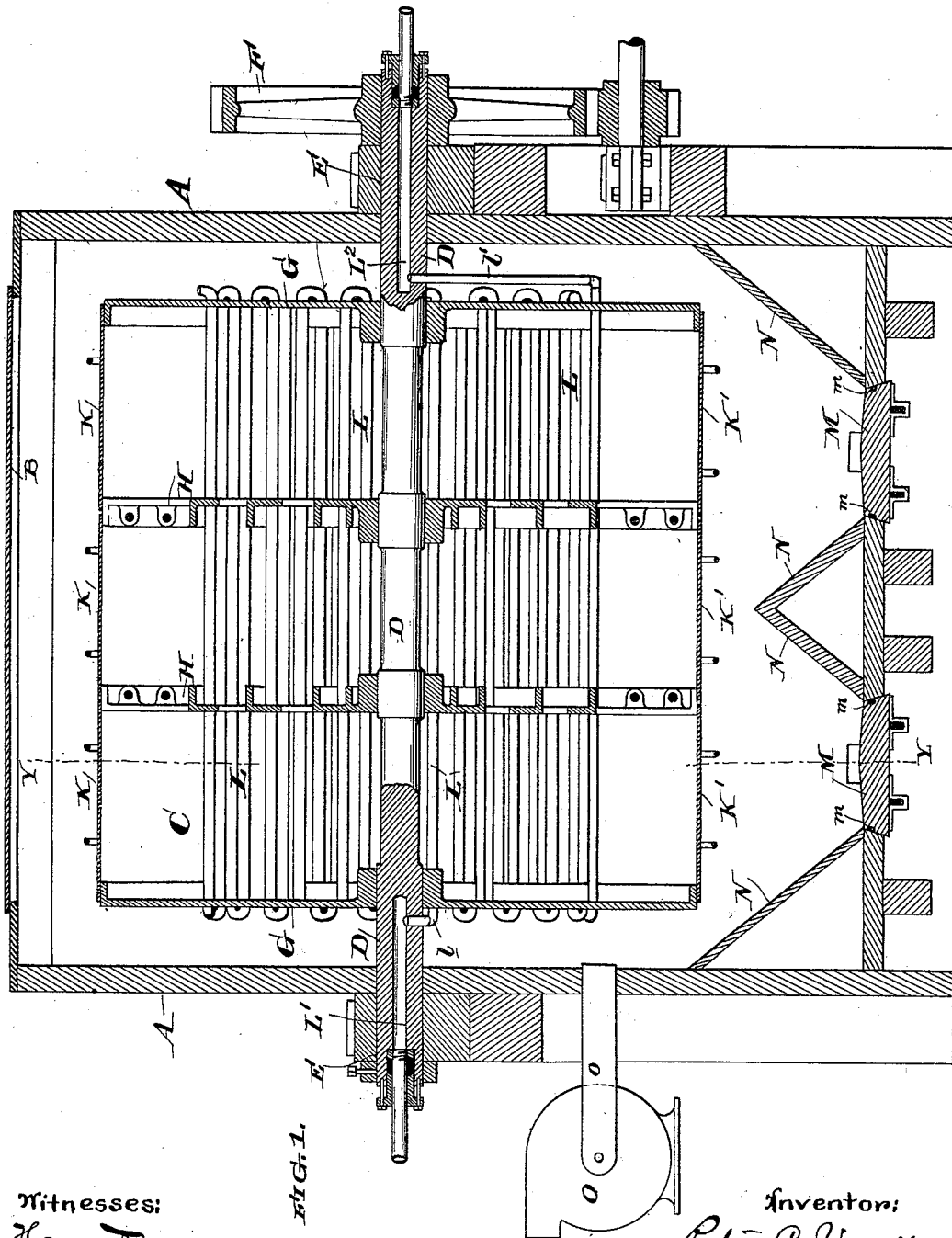


FIG. 1.

Witnesses:

Henry D. Dwyer
Walter Farnsworth

Inventor:

Peter C. Vogellus
By his atty
W. H. H. H. H.

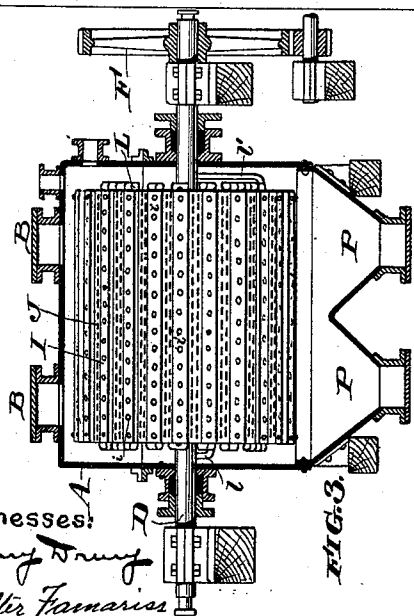
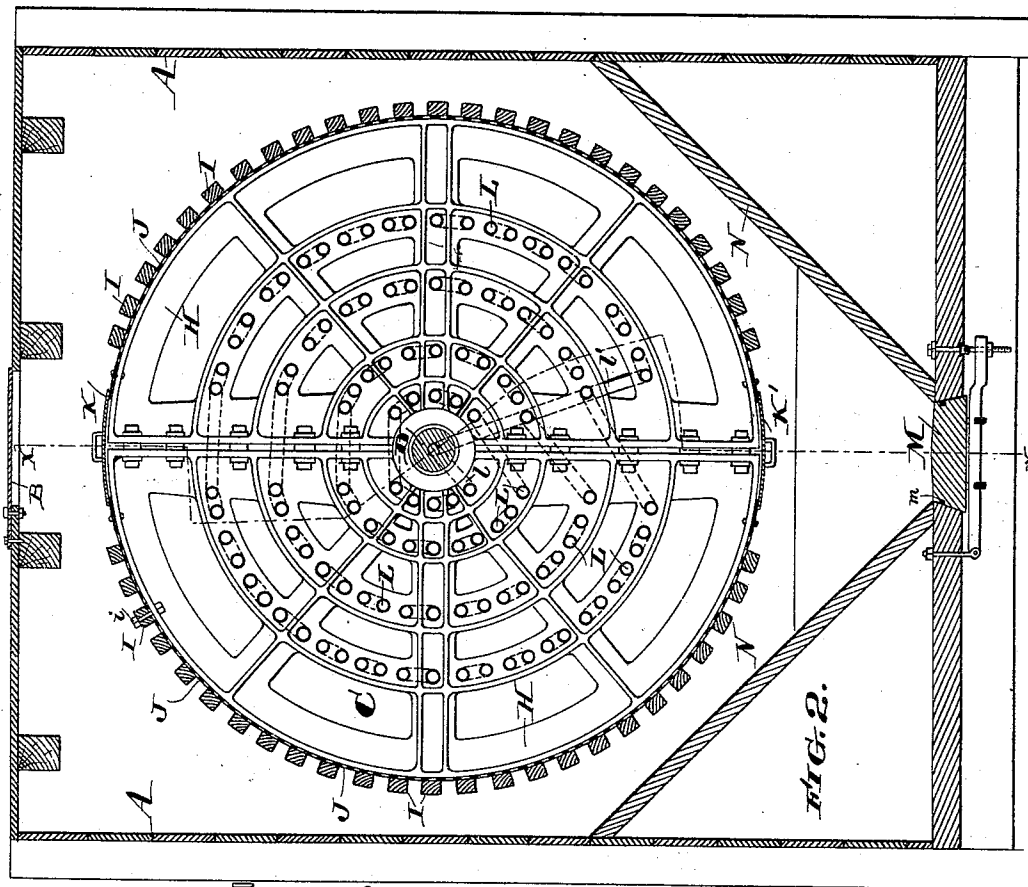
(No Model.)

2 Sheets—Sheet 2.

P. C. VOGELLUS.
DRIER.

No. 543,912.

Patented Aug. 6, 1895.



Witnesses:

Henry D. Dwyer
Walter Farnsworth

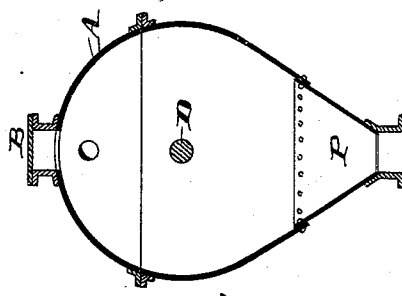


FIG. 4.

Inventor:

Peter C. Vogellus

By his atty

[Signature]

UNITED STATES PATENT OFFICE

PETER C. VOGELLUS, OF PHILADELPHIA, PENNSYLVANIA.

DRIER.

SPECIFICATION forming part of Letters Patent No. 543,912, dated August 6, 1895.

Application filed June 3, 1890. Serial No. 354,133. (No model.)

To all whom it may concern:

Be it known that I, PETER C. VOGELLUS, of the city and county of Philadelphia and State of Pennsylvania, have invented an Improvement in Driers, of which the following is a specification.

My invention has reference to driers; and it consists of certain improvements which are fully set forth in the following specification and shown in the accompanying drawings, which form a part thereof.

My improvements are especially suitable to that class of driers in which the material to be dried is acted upon in a rotary vessel and is subjected to a greater or less degree of heat.

It is the object of my invention to construct a drier of requisite strength and durability capable of containing and treating at one time a very large quantity of material, with the capacity of being quickly and easily charged and discharged.

The apparatus constructed with my improvements may be conveniently repaired in any of its parts without dismantling or taking apart the entire machine. It also possesses a very wide range or scope of operation, so that the material under treatment may be subjected to contact with the atmospheric air, or it may be treated *in vacuo* or subjected to gases or vapors, as desired, or, again, it may be thoroughly freed from moisture or maintained in a more or less moist condition during treatment.

Referring to the drawings for a description of the construction and operation of my improved apparatus, Figure 1 is a longitudinal sectional view of a drier embodying my improvements on the line *xx* of Fig. 2. Fig. 2 is a vertical sectional view of the same on the line *yy* of Fig. 1. Fig. 3 is a longitudinal elevation of a drier, illustrating a modification of my invention with the outer chamber in section; and Fig. 4 is an end elevation of the same.

A is a chamber of any convenient size and construction, provided with a suitable opening or openings B for access to the interior of the chamber for the purpose of charging, &c.

C is a chamber or cylinder for containing the material to be treated, carried by a shaft D, within the chamber A. The shaft D is

journaled in suitable bearings E and is driven by a gear-wheel F or in any other convenient manner to rotate the cylinder or chamber C.

G are the end spiders or frame-pieces of the cylinder, and H H are intermediately-arranged spiders carried by the shaft D and provided with openings.

J is a perforated screen or covering of wire-gauze or other suitable material arranged upon the periphery of the cylinder C and preferably supported by laggings I, secured to the end frame-pieces G G and the spiders H H. These laggings I are arranged on the outside of the screen J and support it against the weight of the material in the chamber. In large driers the screen J is preferably secured to the laggings, also, by means of bolts or otherwise, as shown in Fig. 3, to prevent the screen sagging inwardly.

K K are doors to admit of access to the interior of the chamber or cylinder C. In practice I prefer to employ a separate door between each pair of adjacent spiders, arranging these doors in line.

K' K' are a second set of doors corresponding to the doors K K, arranged a convenient distance from them, with the wire-gauze covering J extending from the door K to the door K', in the manner shown in Fig. 2.

While I have shown only two of the spiders in the drawings it will be understood that any number may be employed, according to the size of the machine, and that the number and arrangement of the doors may be varied.

L is a heating-coil extending through the cylinder C and supported by the spiders H H. It is preferably arranged in the manner shown, traversing the chamber longitudinally in the form of a series of communicating concentric cylinders or tubes. One end of the heating-coil is connected by a pipe *l* with the inlet L' through one end of the shaft F, and the other end is similarly connected by a tube *l'* with the outlet P through the other end of the shaft. By this means steam or hot air may be circulated through the coil L, and the material under treatment in the cylinder or chamber will be subjected to contact with a large heated tube-surface.

The bottom of the chamber A is formed with outlet-openings provided with doors M

M, through which the dried material may be allowed to fall into bins or cars arranged below the outlets.

5 N N are inclined guides arranged within the chamber A for the purpose of guiding the material to the outlet-openings. These guides N N are preferably arranged in the manner shown, inclining from the four sides down to the outlet-opening, and thus forming a funnel or hopper, so that the contents of the apparatus may be thoroughly discharged when desired.

15 The doors M M may be provided with a packing of rubber or other material *m* to form an air-tight joint when the doors are closed.

O is an exhaustor or other vacuum-creating device connected with the chamber A by a pipe *o*, which may be employed, if desired, for the purpose of drawing off the vapors arising from the treatment of the material or for creating a partial vacuum in the apparatus.

20 The operation of the device will be readily understood from the foregoing description of the drawings. The doors B and K are opened and the material to be treated is placed in the vessel C. If agitation is desired the cylinder or chamber C is rotated, and heat is supplied by means of the heating-coil L. The vapors arising from the treatment of the material escape through the perforations of the screen or covering J. These openings or perforations, while allowing the vapors to pass off, are not of sufficient size to allow the material in the cylinder to pass through them.

30 The exhaustor O may be employed to draw off the vapors, or, if desired, to create a partial vacuum in the chamber. By opening the door B to admit the air and operating the exhaustor, atmospheric air may be circulated

40 through the drier. When the material has

been sufficiently treated, the doors K or K' are opened, and the dried material is allowed to pass out of the cylinder C and is guided by the inclined guide N through the doors M (which have been opened) and into the receptacles placed below.

While I prefer the details of construction which are here shown, it is apparent that they may be modified in many ways without departing from the spirit of my invention.

50 In Figs. 3 and 4 is shown a modification of my invention, in which the chamber A is constructed of sheet metal with one or more openings in the top for charging the inner cylinder, and the bottom of the chamber is formed with one or more discharging-funnels P in the place of the internally-arranged inclined guides N N. (Shown in Figs. 1 and 2.)

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

A drying apparatus consisting of a closed chamber, a central rotary shaft extending through the chamber and having hollow ends, a rotary drying chamber carried by the rotary shaft, and a series of heating pipes within the rotary drying chamber, carried by it and extending longitudinally with reference to the central shaft and communicating with the hollow ends thereof and located at different distances from it so as to form concentric series of longitudinally extending pipes located at different distances about the shaft.

In testimony of which invention I have hereunto set my hand.

PETER C. VOGELLUS.

Witnesses:

ERNEST HOWARD HUNTER,
MAURICE H. HOLMES.