

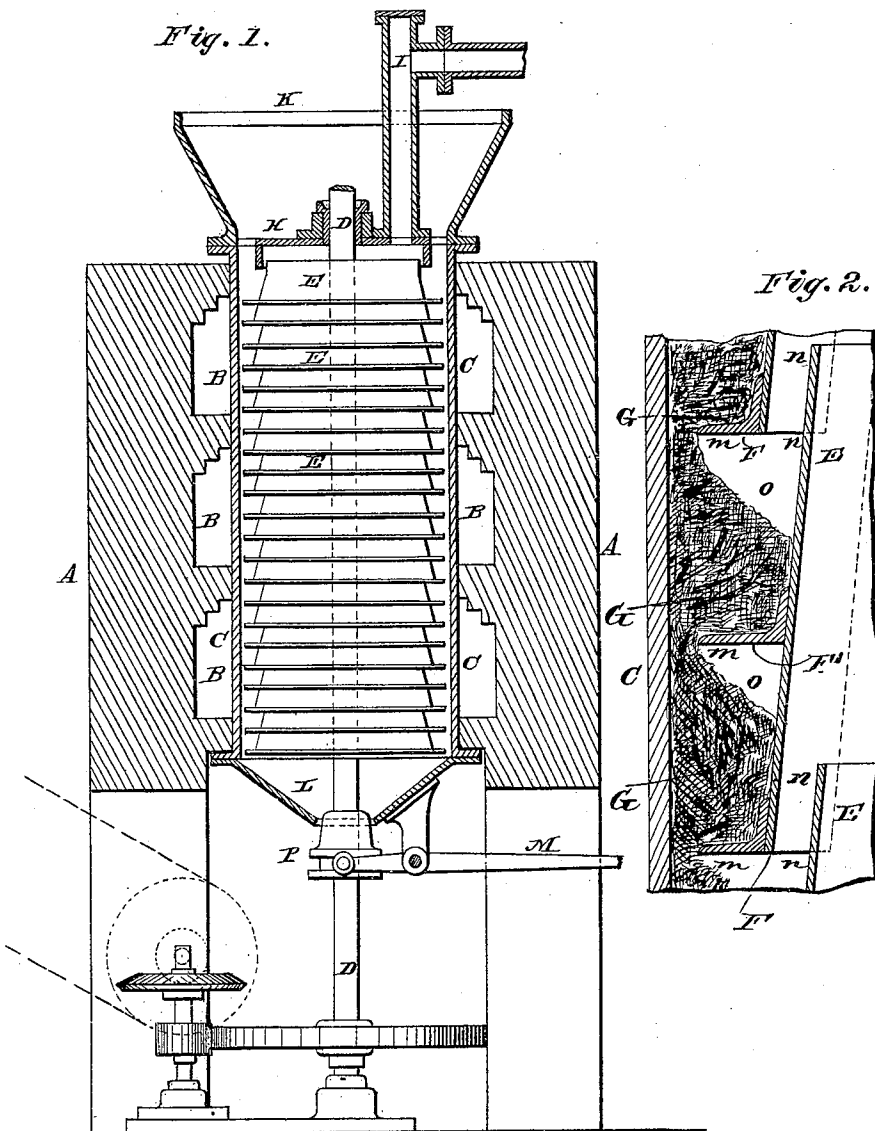
(No Model.)

H. C. F. STÖRMER.

APPARATUS FOR DRYING SPENT DYE WOOD, &c.

No. 249,688.

Patented Nov. 15, 1881.



WITNESSES

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UNITED STATES PATENT OFFICE.

HENRIK C. F. STÖRMER, OF PARIS, FRANCE.

APPARATUS FOR DRYING SPENT DYE-WOOD, &c.

SPECIFICATION forming part of Letters Patent No. 249,688, dated November 15, 1881.

Application filed July 22, 1881. (No model.)

To all whom it may concern :

Be it known that I, HENRIK CHRISTIAN FREDERIK STÖRMER, of Paris, in the Department of Seine, in the Republic of France, have
5 invented certain new and useful Improvements in Apparatus for Drying Spent Dye-Wood, Sawdust, Tan-Bark, &c., and for Drying Corn; and I do hereby declare the following to be a full, clear, and exact description of the invention,
10 such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification, and in which—

15 Figure 1 is a vertical axial section of my improved drying apparatus; and Fig. 2 is a vertical sectional view, on a considerably enlarged scale, of a portion of the retort.

Similar letters of reference indicate corresponding parts in both the figures.

My invention has relation to that class of apparatus for the drying of spent dye-woods, tan-bark, sawdust, corn, and other substances, which consist, essentially, of a fixed cylindrical
25 retort mounted vertically within a cylindrical oven, the material to be dried being fed into the cylinder from the top, and delayed in its passage through it by revolving shelves or similar devices within the cylinder, the dried or carbonized substance escaping at the bottom of
30 the cylinder, while the products of the resulting distillation escape from the top through suitably-arranged pipes or other outlets.

My improvement consists in the means whereby I provide for the regular, even, and unobstructed passage of the material to be dried
35 through the cylindrical retort from top to bottom, thus causing all parts to be affected evenly by the heat, and preventing choking up of the retort by an accumulation of matter at any one place.

In the annexed drawings, the letter A represents a brick furnace provided with flues B, which impinge upon the stationary cylindrical
45 retort C. The latter is provided with a vertical shaft, D, which may be rotated by a train of intermeshing cog-wheels or other suitable mechanism, as indicated in the drawings, located either at its top or bottom, as may be
50 found most convenient. The cylindrical retort C has an open top, to the rim of which is bolted

a hopper, K, for feeding the material to be dried down into the retort, and to its bottom rim is bolted a hopper, L, for discharging the dried and distilled product. The top of the central
55 shaft or axle, D, is journaled in a stationary top plate, H, arranged within the mouth of the cylinder so as to leave a narrow annular space between the two, through which the material is fed from the hopper K into the body of the
60 retort. Within the latter are arranged a series of cones, E, open at the top and bottom, and fastened upon the central revolving shaft, D, in any convenient manner. These cones are so placed, one above another, as to overlap
65 each other at the top and bottom, as shown clearly in the enlarged sectional view, Fig. 2, and each cone has bolted to it a pair of annular shelves, F F', the former one of which is at the lower rim of the cone, and the latter about
70 half-way up. Each of these shelves is angular in cross-section, so as to form a horizontal projecting part or shelf proper, and an inclined flange or collar by means of which the shelf is bolted upon the cone. By the arrange-
75 ment of these shelves in the manner described it will be seen that they are placed at regular intervals vertically above one another throughout the height of the cylindrical retort, from top to bottom, leaving a narrow annular space,
80 m, between each of the equidistant shelves F F' and the cylindrical wall of the retort C, within which the apparatus consisting of the parts D E F F' revolves.

As the dye-wood or other material passes
85 through the retort it is intercepted by the rotating shelves, which pile it up against the heated wall of the retort. As the material is thus gradually dried it is also and at the same time fed gradually from each shelf in its turn
90 to the shelf next below, and during this process it is so piled upon each succeeding shelf as to form an open space, (designated by the letter o in Fig. 2, in which figure G represents the dye-wood, tan-bark, or other material,) which affords room for the development
95 of the gases and vapors resulting from the process of drying, and which escape through the spaces n between the overlapping cones into the hollow interior formed by the series of overlapping cones, up to the top of the cylinder,
100 and out through the discharge-pipe I, to a suit-

ably-constructed condensing and purifying apparatus. After the mass has been thoroughly dried or carbonized, as the case may be, (that depending upon the amount of heat applied and the speed with which shaft D is rotated,) it is received in the hopper L and discharged through the central opening of the same into a chute or receptacle placed below. The mouth of the hopper may be closed or its size regulated by a conical stopper or collar, P, which is vertically adjustable upon shaft D, which passes through it by means of the lever M. In this manner—*i. e.*, by adjusting the position of the collar P upon shaft D—the mouth of the hopper L may be so regulated as to size as to discharge slowly or quickly at will, and thus contribute to the degree of speed with which the material is to be fed through the retort.

20 Having thus described my invention, I claim and desire to secure by Letters Patent of the United States of America—

1. In an apparatus for the drying of comminuted material, such as spent dye-woods, spent tan-bark, &c., the combination, with a vertical retort of cylindrical shape mounted within a suitable furnace and provided with a receiving-hopper at the top and discharge-hopper at the bottom, of a set or series of open

overlapping cones mounted, as described, upon a rotating vertical shaft within the retort, so as to leave an open annular space between the bottom of each cone and the wall of the retort, and between the top rim of each cone and the bottom rim of the cone next above, substantially as herein shown and set forth. 35

2. The herein-described apparatus for the drying of comminuted material, such as spent dye-woods, spent tan-bark, &c., the same consisting of the oven or furnace A, having flues B, cylindrical retort C, having the receiving-hopper K, discharge-hopper L, annular top plate, H, and discharge-pipe I, vertical shaft D, having the cones E, arranged as described, and each provided with the shelves or ledges F F', means for rotating the shaft D, and the vertically-adjustable collar P, for regulating the outlet of the discharge-hopper, all constructed and combined to operate substantially in the manner and for the purpose herein shown and set forth. 50

In testimony that I claim the foregoing I have hereunto set my hand this 19th day of January, 1881.

HENRIK CHRISTIAN FREDERIK STÖRMER.

Witnesses:

N. CHRISTENSEN,
ROBT. M. HOOPER.