

(No Model.)

2 Sheets—Sheet 2.

W. HARMON.
DRIER.

No. 512,547.

Patented Jan. 9, 1894.

Fig 2

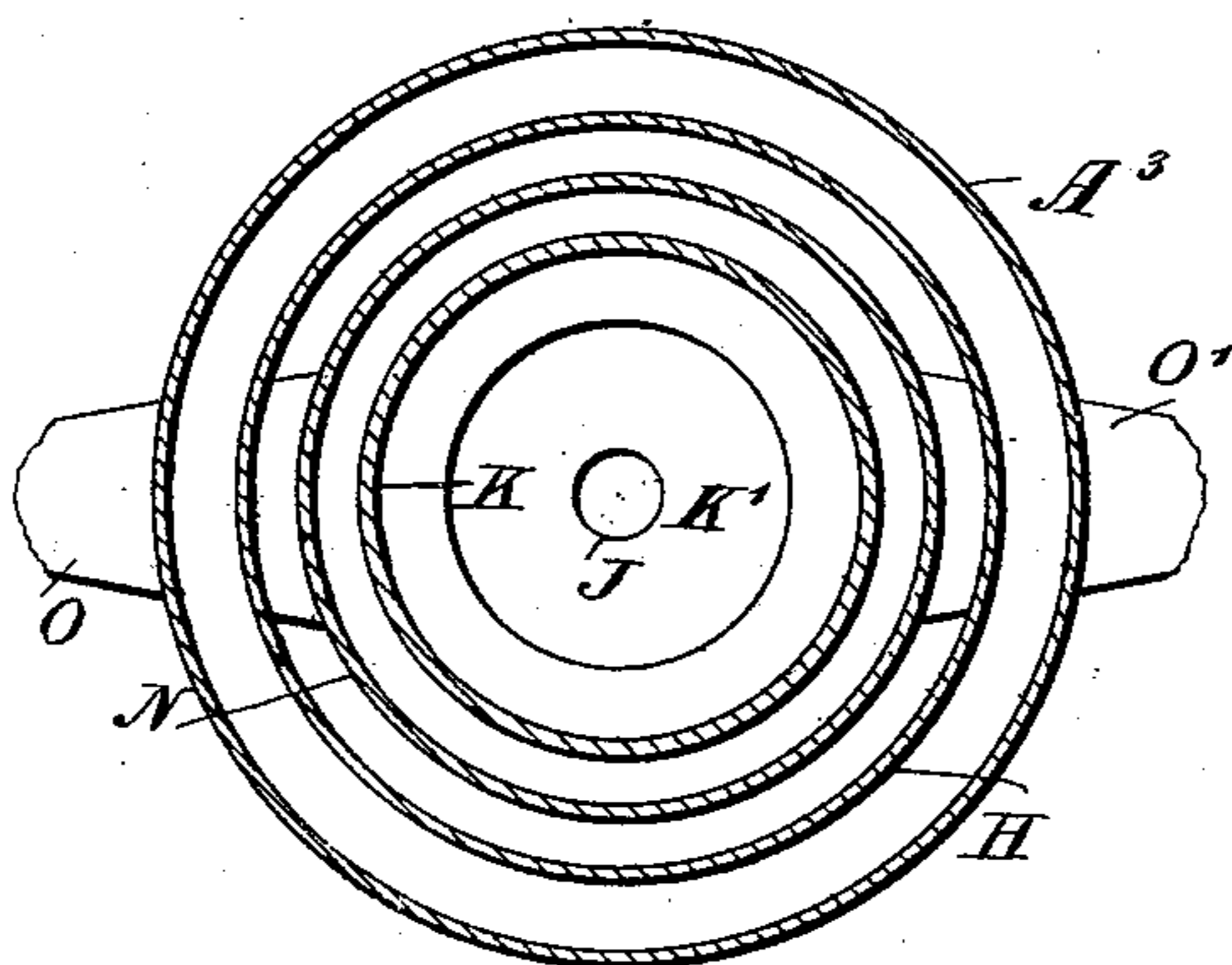
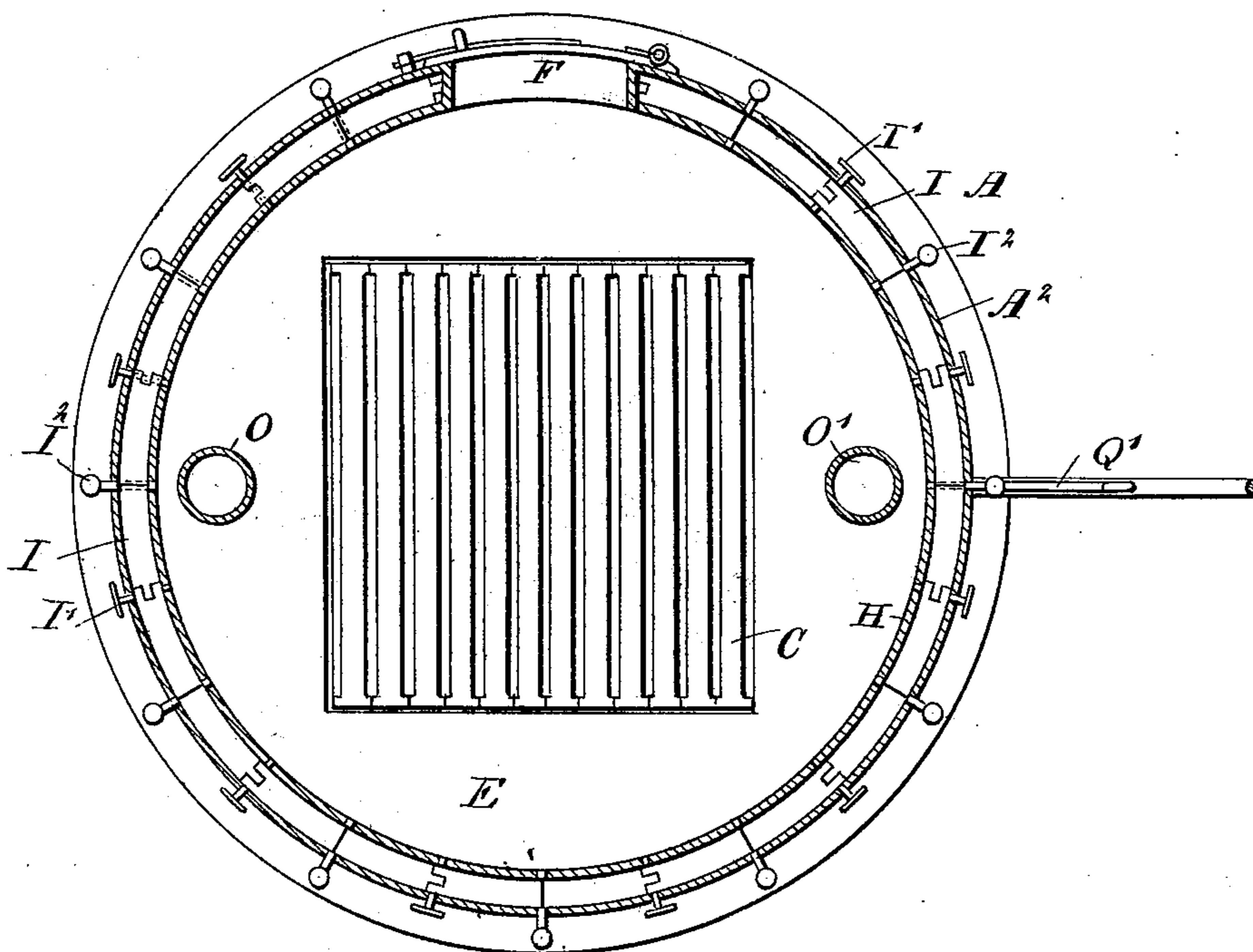


Fig 3



WITNESSES:

H Walker
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UNITED STATES PATENT OFFICE.

WILLIAM HARMON, OF BARTOW, FLORIDA.

DRIER.

SPECIFICATION forming part of Letters Patent No. 512,547, dated January 9, 1894.

Application filed January 7, 1893. Serial No. 457,644. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM HARMON, of Bartow, in the county of Polk and State of Florida, have invented a new and Improved Drier, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved drier, which is simple and durable in construction, very effective in operation, arranged for continuous feeding and discharge of the material, and designed for use in drying grain, phosphate and other substances.

The invention consists principally of an exterior shell formed at its lower end with a conical bottom, and a concentric inner shell forming an annular space with the exterior shell and discharging at its lower end into the said conical bottom, and an inverted cone-shaped smoke flue leading from the heating chamber to carry off the smoke and gases, the said smoke flue being surrounded by a concentric shell, forming an additional space for the material and connected at its lower end by pipes with the conical bottom of the exterior shell.

The invention also consists of certain parts and details, and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a sectional side elevation of the improvement. Fig. 2 is a sectional plan view of part of the same, on the line 2—2 of Fig. 1; and Fig. 3 is a sectional plan view of the same on the line 3—3 of Fig. 1.

The improved drier is provided with an exterior shell A formed at its lower end with the cylindrical part A' resting on a suitable foundation B. From the upper end of the cylindrical part A' extends the cone-shaped part A² terminating at its small end in the cylindrical part A³ into which the material or article to be dried is discharged from a conveyer, elevator or other suitable machine. In the cylindrical lower end A' of the shell is arranged an inverted cone-shaped bottom A⁴ over which passes the finally dried material, through an outlet opening A⁵ arranged in the

center of the said inverted cone-shaped bottom. Within the exterior shell A is arranged a grate C extending about at a level with the upper end of the cylindrical part A', the said grate opening at its under side into an ash pit D made in the shape of a box and secured on a horizontally-extending partition E supported from the shell A. The ash pit D is provided with suitable air inlet apertures D' to conduct the necessary air to the under side of the grate C to insure complete combustion of the fuel burning on the said grate.

The fuel is introduced onto the grate through a suitable feed door F arranged in one side of the shell A in the conical part A² thereof, and the ashes can be conveniently removed from the ash pit D through a suitable door G, also arranged in one side of the shell, but in the cylindrical part A'. Within the conical part A² of the exterior shell A is arranged an interior concentric shell H forming an annular space with the said part A² for the passage of part of the material to be dried. The lower end of this annular space terminates in the horizontal partition E, and this lower end of the annular space can be closed by a series of segmental trap doors I hinged at I' to the shells A and H, one trap door overlapping the next following one at the pivot end thereof, as plainly indicated in Fig. 3.

The free ends of the doors are adapted to be supported by pins I² which, when withdrawn, permit the doors to swing downward so as to connect the annular space formed by the shell H and the shell part A² with the lower cylindrical part A' of the shell.

A suitable distance above the grate C and centrally in the shell A, is arranged a pipe J leading to the funnel-shaped end K' of the inverted cone-shaped smoke flue K, connected at its upper end with the smoke pipe L leading to the outside. The smoke flue K is surrounded by a concentric shell N forming with the said smoke flue, an annular space for the passage of part of the material to be dried. The upper end of this concentric shell N connects with the upper end of the concentric shell H so that a heating chamber is formed above the grate bars C within the space inclosed by the shells H and N. The lower ends of the latter connect by two cone-shaped pipes

a smoke flue arranged inside the said shells, a concentric shell around the said smoke flue, and connected at its upper end with the said first named concentric shell to form a heating chamber, pipes leading from the said second concentric shell to the bottom part of the exterior shell, and a conveyer upon which discharges the outlet opening of the said bottom, to remove the dried material, substantially as shown and described.

6. A drier comprising an exterior shell having a discharge chamber in its bottom portion and a heating chamber above the same, an inner concentric shell above said bottom chamber; the annular drying space between

the two shells being open at its upper end to receive the descending material to be dried and a series of doors for establishing and closing communication between the lower end of said annular space and the said discharge chamber, a smoke flue within said shells and a concentric shell around the said smoke flue connected at its upper end with the said inner concentric shell to form the said heating chamber, substantially as set forth.

WILLIAM HARMON.

Witnesses:

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A. B. FERGUSON.



(No Model.)

F. G. HURLBUT.
BICYCLE STAND.

No. 512,548.

Patented Jan. 9, 1894.

