(No Model.) 3 Sheets—Sheet 1.

H. BREER.

DESICCATING APPARATUS.

No. 303,913. Patented Aug. 19, 1884.

FIG-1-

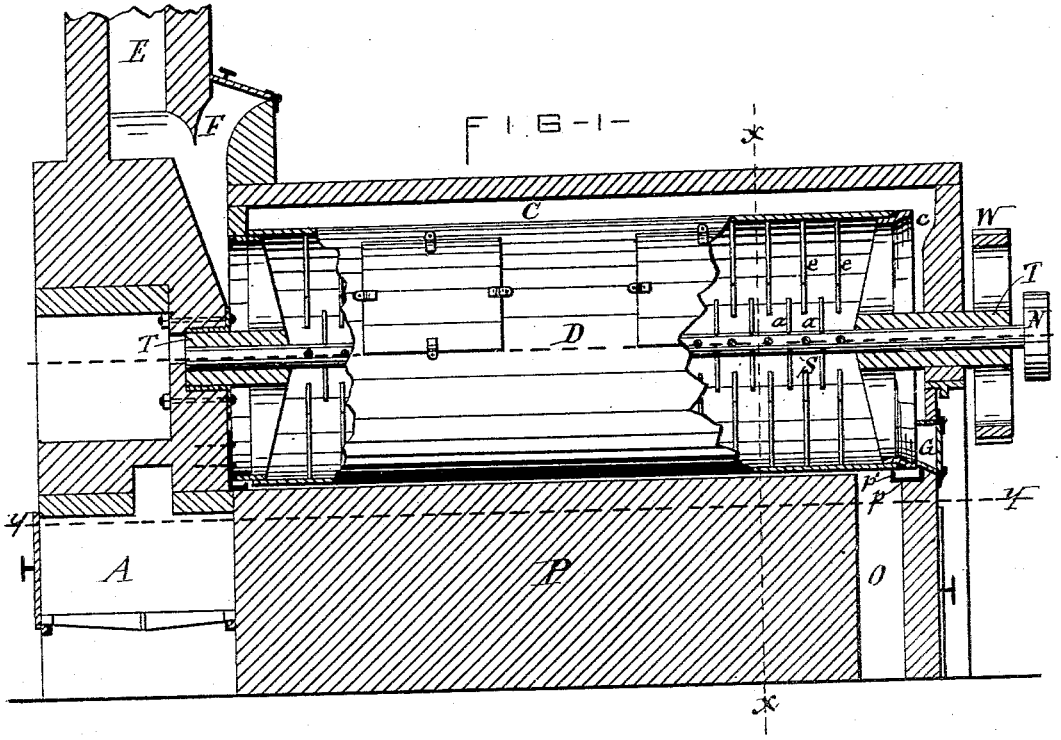
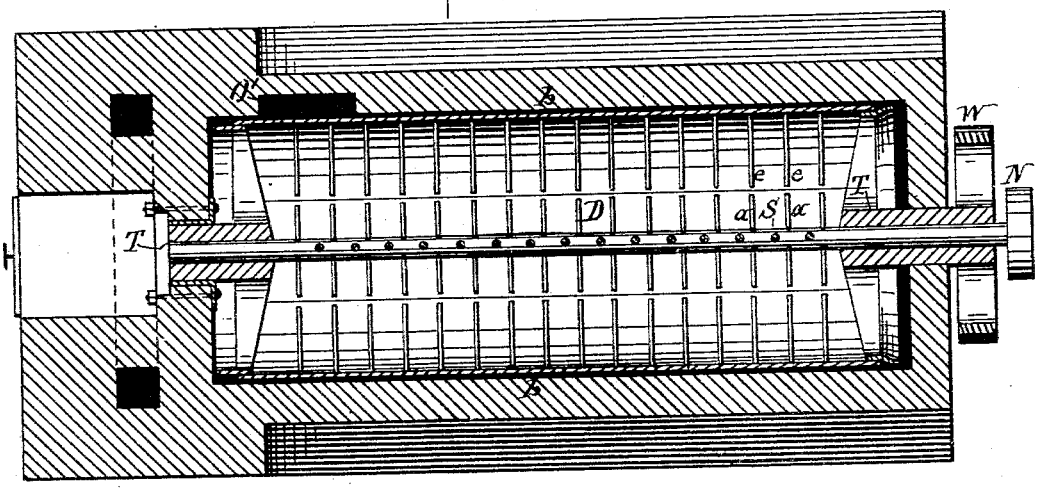


FIG-2-



ATTEST—
Geo. C. Raymond.
F. H. Gibbs

INVENTOR—
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his Attys

(No Model.) 3 Sheets—Sheet 2.

H. BREER.

DESICCATING APPARATUS.

No. 303,913. Patented Aug. 19, 1884.

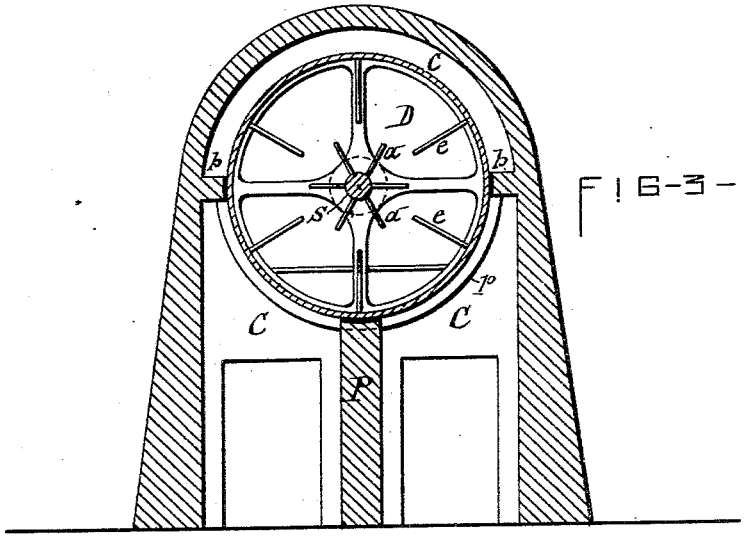

FIG-3-

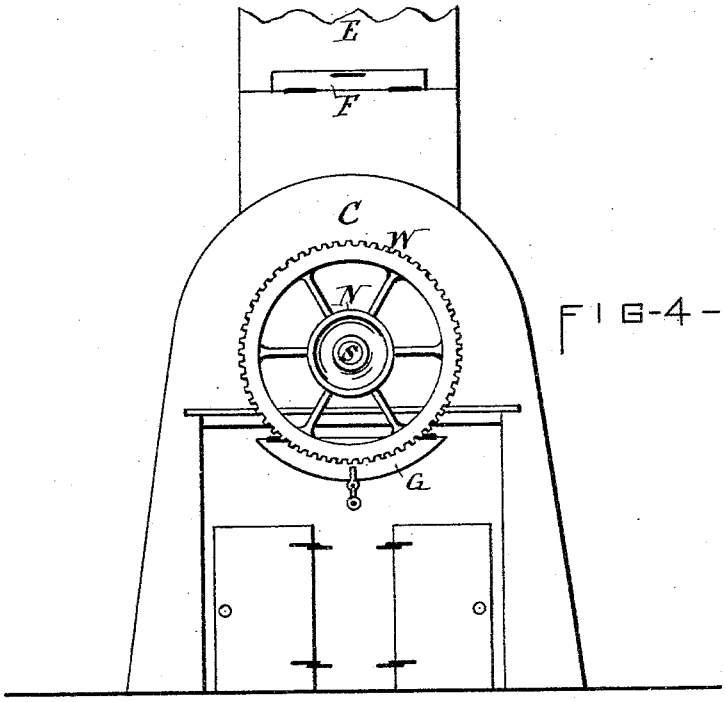

FIG-4-

ATTEST—
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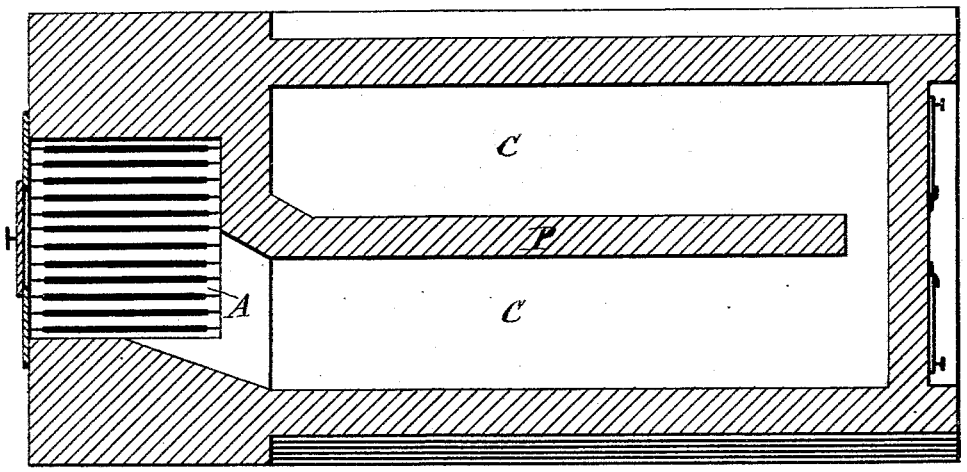
(No Model.) 3 Sheets—Sheet 3.

H. BREER.

DESICCATING APPARATUS.

No. 303,913. Patented Aug. 19, 1884.

FIG-5-



ATTEST—
Wm. C. Raymond
J. H. Gibbs

INVENTOR—
Henry Breer
per Gould, Lacey & Hey
his Attys.

UNITED STATES PATENT OFFICE.

HENRY BREER, OF DE WITT, NEW YORK, ASSIGNOR TO CAROLINE H. BREER OF SAME PLACE.

DESICCATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 303,913, dated August 19, 1884.

Application filed January 5, 1884. (No model.)

To all whom it may concern:

Be it known that I, HENRY BREER, of De Witt, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Desiccating Apparatus, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

This invention relates to the class of desiccating apparatus designed for the treatment of animal matter for fertilizers, and has more particular reference to the apparatus for which I have obtained Letters Patent of the United States, No. 286,897, dated October 16, 1883.

The object of my present invention is to produce a desiccating apparatus which shall be more effective in its operation; and to that end the invention consists in the improved construction of the desiccating cylinder and its inclosing combustion-chamber, as hereinafter fully described, and specifically set forth in the claims.

In the accompanying drawings, Figures 1 and 2 are respectively vertical and horizontal longitudinal sections of my invention. Fig. 3 is a vertical transverse section on line *x x* in Fig. 1. Fig. 4 is a rear end view of the apparatus, and Fig. 5 is a horizontal section on line *y y* in Fig. 1 of the drawings.

Similar letters of reference indicate corresponding parts.

A represents the furnace or fire-arch which is to furnish the heat required for the desiccating process.

C is the combustion-chamber, communicating at one end with the furnace A, and inclosing the rotary desiccating-cylinder D, which is arranged horizontally therein, and has at opposite ends trunnions T T, by which it is journaled in suitable bearings in the end walls of the combustion-chamber. A recess in the upper portion of the inner side of the rear end wall forms a passage, *c*, for the products of combustion to the interior of the cylinder D; and the smoke-stack E, which is at the front or furnace end of the apparatus, allows the products of combustion and the vapor to escape from the desiccating-cylinder.

F denotes a chute through which to introduce the animal matter in the front end of the cylinder; and G is a gate in the rear end wall of the combustion-chamber, through which to remove the desiccated substance from the cylinder. A gear-wheel, W, on the rear trunnion, T, and connected with a suitable motor, (not shown,) serves to impart rotary motion to the cylinder D, the latter being provided internally with radial arms to stir and break up the substance under treatment.

Thus far is about the general construction of the apparatus heretofore used by me. One of the defects found in said apparatus consisted in the leakage at the ends of the cylinder D, and this I overcome by means of plates *p*, secured to the end walls of the combustion-chamber and reaching under the cylinder, and provided at their inner edge with an upward-projecting flange, *p'*, which abuts against the exterior of the cylinder and forms a trough, as shown in Fig. 1 of the drawings, to collect the aforesaid leakage.

The lower portion of the combustion-chamber C, I divide into two longitudinal passages or flues, only one of which communicates with the furnace, as illustrated in Fig. 5 of the drawings. The partition P, between the said flues, terminates with an opening, O, at the rear end of the combustion-chamber, and through said opening the two flues communicate with each other. The upper portion of the combustion-chamber I separate from the lower portion thereof by horizontal partitions *b b*, projecting from the sides of the combustion-chamber, and abutting against the sides of the cylinder D. Said horizontal partitions extend from the rear end of the combustion-chamber toward the forward end thereof, at which latter point that one of the partitions *b* which is over the lower indirect or return flue, is provided with an opening, O'. The result of this arrangement is that the products of combustion are caused to pass from the furnace along one side of the lower portion of the desiccating-cylinder, thence back on the opposite side thereof, thence up over the upper portion of the cylinder to the rear end thereof, where they enter the cylinder through the passage *c*. By the described tortuous course

of the products of the combustion over the exterior of the cylinder, I am enabled to more effectually utilize the heat evolved by the combustion of the fuel in the furnace, and to materially expedite the desiccating process. In order to more thoroughly agitate and break up the substance under treatment, I make the trunnion of the cylinder D hollow, and extend longitudinally through said cylinder and its trunnions a shaft, S, which I provide at the inside of the cylinder with a series of spokes, *a a*, the outer end of said shaft being provided with a pulley or pinion, N, which is to be connected with a suitable motor to transmit rotary motion to the shaft. The pulleys or gears W and N are to be so proportioned in relation to each other as to produce a differential movement between the cylinder and shaft, the latter being required to rotate much faster than the cylinder.

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

In combination with the desiccating-cylinder D, and the furnace A, and stack E at one and the same end of the cylinder, the combustion-chamber C, provided at the opposite end with the fire-passage *c*, and having its lower portion divided into two longitudinal flues, one of which communicates at one end with the furnace and at the opposite end with the other flue, and the upper portion of the combustion-chamber separated from the lower portion thereof by horizontal partitions *b b*, provided with an opening, O, over the forward end of the lower return-flue, substantially as described and shown.

In testimony whereof I have hereunto signed my name and affixed my seal, in the presence of two attesting witnesses, at Syracuse, in the county of Onondaga, in the State of New York, this 6th day of December, 1883.

HENRY BREER. [L. S.]

Witnesses:

FREDERICK H. GIBBS,

WM. C. RAYMOND.