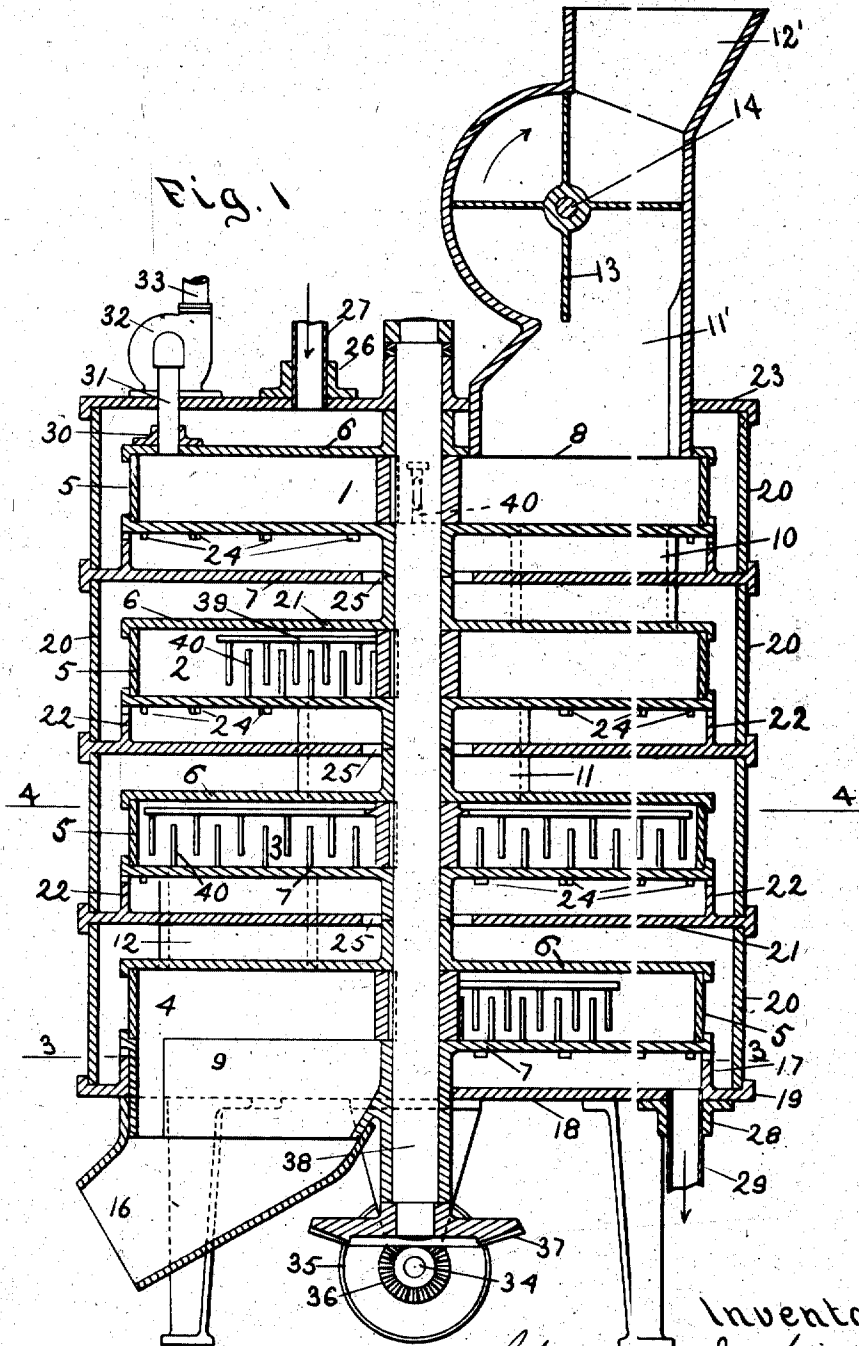


C. D. JENKINS.
 DRYING APPARATUS FOR PEAT AND THE LIKE.
 APPLICATION FILED MAY 1, 1915.

1,220,131.

Patented Mar. 20, 1917
 3 SHEETS—SHEET 1.



Inventor
 Charles D. Jenkins
 by *Nathan H. Randal*
 Att.

C. D. JENKINS.
 DRYING APPARATUS FOR PEAT AND THE LIKI.
 APPLICATION FILED MAY 1, 1915.

1,220,131.

Patented Mar. 20, 1917.

3 SHEETS—SHEET 2.

Fig. 2

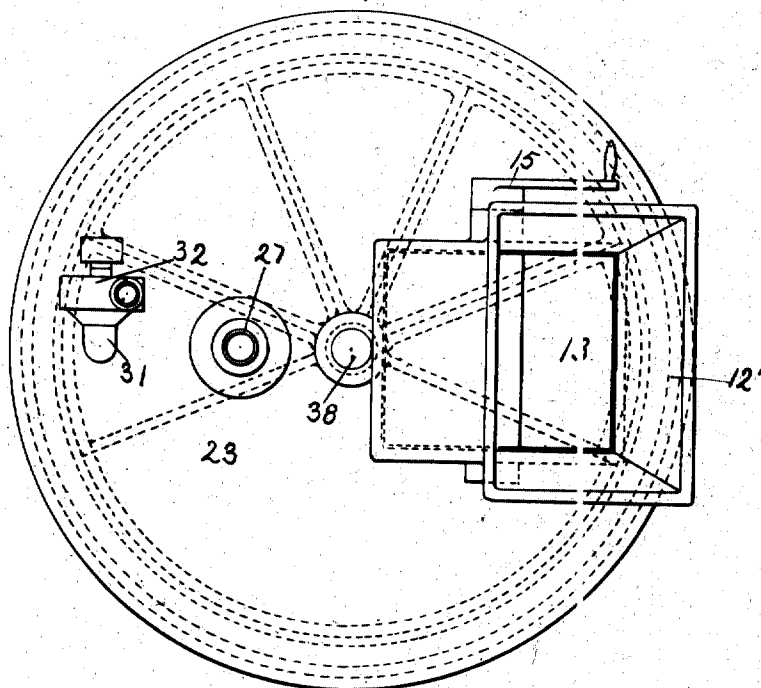
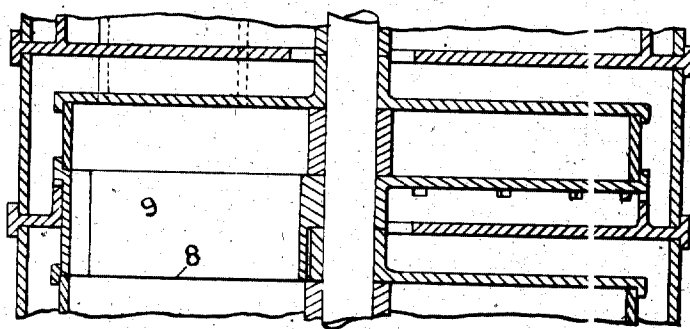


Fig. 5



Inventor
 Charles D. Jenkins
 by *Wm. Randolph*
 Att'y

C. D. JENKINS.
 DRYING APPARATUS FOR PEAT AND THE LIKE.
 APPLICATION FILED MAY 1, 1915.

1,220,131.

Patented Mar. 20, 1917.
 3 SHEETS—SHEET 3.

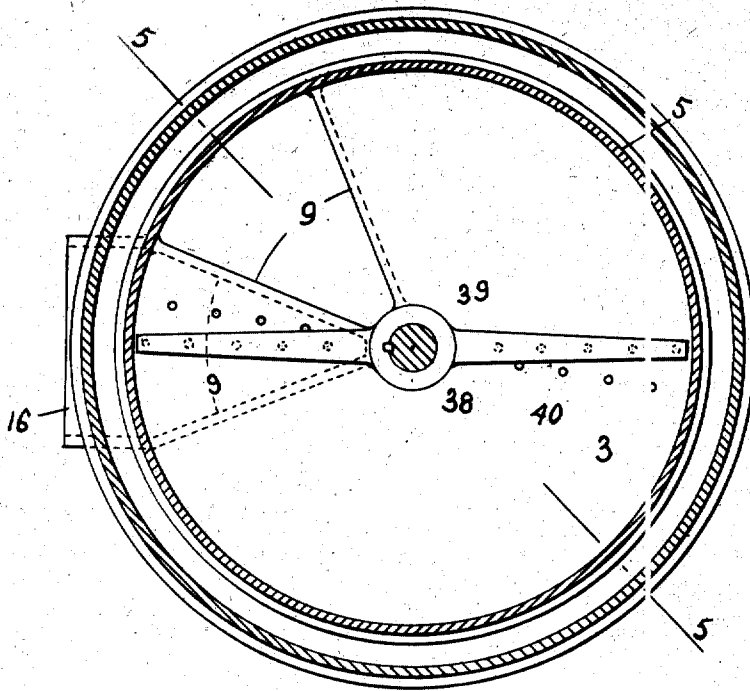


Fig. 4

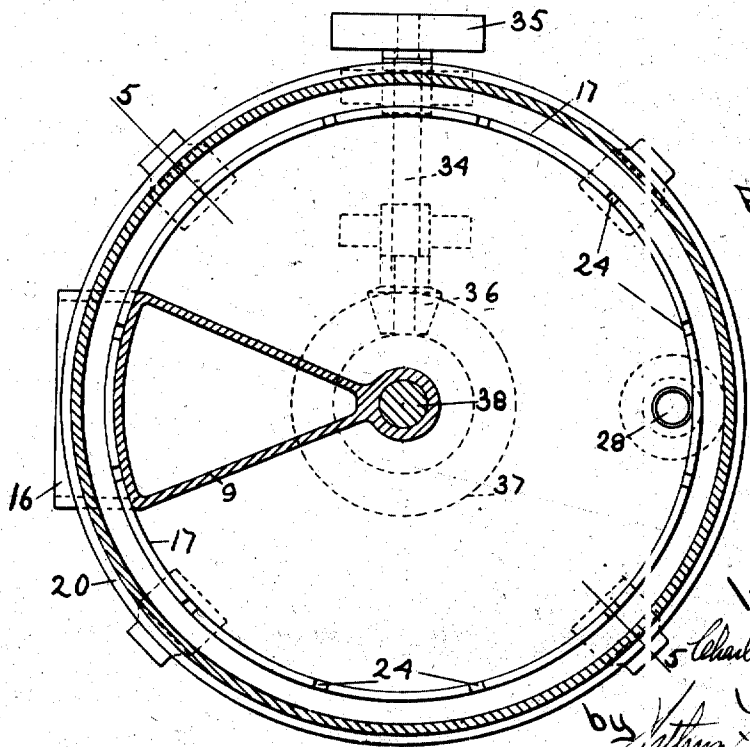


Fig. 3

Inventor
 C. D. Jenkins
 by *Arthur Maudall*
 Att'y

UNITED STATES PATENT OFFICE.

CHARLES D. JENKINS, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO PEAT COAL LIMITED,
OF BOSTON, MASSACHUSETTS, A VOLUNTARY ASSOCIATION.

DRYING APPARATUS FOR PEAT AND THE LIKE.

1,220,131.

Specification of Letters Patent.

Patented Mar. 20, 1917.

Application filed May 1, 1915. Serial No. 25,116.

To all whom it may concern:

Be it known that I, CHARLES D. JENKINS, a citizen of the United States, and resident of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Drying Apparatus for Peat and the like, of which the following is a specification.

My invention relates to apparatus for use in drying material such, for example, as peat, sand, etc., and in the case of material such as peat, to not only dry the material but to also collect the vapors or gases given off by the material during the drying process in order that the by-products such as alcohol, ammonia and creosote contained in said vapors or gases may be saved and utilized.

The object of my invention is to provide an improved drying apparatus of the character indicated, and particularly an apparatus which will carry out the said process of drying and extracting in a continuous, speedy, efficient and economical fashion.

The invention consists of a drier, and of a combined drier and extractor for materials of the character indicated embodying the novel features of construction and peculiar mode of operation set forth in the following description and particularly pointed out and defined in the claims at the close thereof.

In the accompanying drawings:—

Figure 1 is a central vertical sectional view of a drier and extractor constructed in accordance with my invention.

Fig. 2 is a partial plan view of the apparatus shown in Fig. 1.

Fig. 3 is a section on line 3—3 of Fig. 1.

Fig. 4 is a section on line 4—4 of Fig. 1.

Fig. 5 is a section on line 5—5 of Figs. 3 and 4.

The apparatus herein shown and described is one of several different contrivances which I have devised to carry out a new process for excavating and treating peat to produce commercial briquets for use as fuel or the like, and for removing and collecting the by-products referred to above. In accordance with this new process the water saturated peat from the bog is first passed through a machine which extracts the greater part of the moisture and then, from this water-extracting machine, the

peat is delivered in a moist condition to the apparatus which is the subject of this application.

Having reference to the drawings, 1, 2, 3 and 4 represent four cylindrical chambers or compartments each comprising a vertical annular wall 5, cap 6 and a floor 7, each cap 6 being made with an entrance opening 8 and each floor 7 with an exit opening 9. The entrance opening 8 and exit opening 9 of each chamber are angularly offset so that the outlet opening is not in vertical alignment with the inlet opening and consequently material falling by gravity through the inlet opening of any one of the chambers will land upon the floor of the chamber.

The outlet opening 9 of the chamber 1 is preferably, though not essentially, connected with the inlet opening 8 of chamber 2 by a conduit 10; the outlet opening 9 of the chamber 2 is connected by a conduit 11 with the inlet opening 8 of chamber 3 and the outlet opening 9 of chamber 3 is connected by a conduit 12 with the inlet opening 8 of the chamber 4.

The inlet 8 of chamber 1 is connected with the lower end of a conduit 11 terminating at its upper end in a hopper 12'. In this conduit 11 between hopper 12' and inlet 8 is arranged a rotatable valve 13 fixed to a shaft 14 one end of which extends through the wall of conduit 11 and, upon the outside of the latter, is provided with a handle 15, Fig. 2, by means of which the valve 13 can be manually rotated in the direction of the arrow to feed the material into chamber 1.

The outlet 9 of chamber 4 communicates with a discharge spout 16 through which the treated material passes from the apparatus.

The floor 7 of chamber 4 rests upon an annular wall 17 projecting upward from the base 18 of a housing that incloses all of the chambers. Outside of wall 17 the base 18 is made with an upstanding annular rim 19 within which is arranged the lower end of a cylindrical section 20 whose upper end fits within a depending peripheral flange or rim provided upon a baffle plate or diaphragm 21. The baffle plate 21 is made with an upright annular wall 22 supporting the floor of chamber 3 and with an upwardly

projecting peripheral flange within which is arranged the lower end of another cylindrical section 20.

This second cylindrical section 20 supports a second baffle plate 21 which likewise supports chamber 2 and a third cylindrical section 20. This third cylindrical section 20 supports a third baffle plate 21 which in turn supports chamber 1 and a fourth cylindrical section 20, on the top of which latter is mounted the housing top 23 through which the conduit 11 extends. Each upright annular chamber supporting wall 22 is formed near its top with air passages 24 while each baffle plate 21 is made with a central opening 25 which serves as an air passage.

The top wall 23 of the chamber-inclosing housing is made with an inlet 26 connected by a pipe 27 with a supply of hot air, or other fluid heating medium, while the bottom wall 18 of said housing is made with an air outlet 28 with which off-take pipe 29 is connected.

If necessary a blower, not shown, may be provided to cause the hot air to flow into the housing at inlet 26 and out at the outlet 28. It will thus be seen that the drying chambers and their connecting conduits 10, 11 and 12 are surrounded by a series of hot air jackets which are continuously supplied with hot air from pipe 27 and from which the cooled air is drawn off, or discharges, through pipe 29.

The hot air entering the housing at inlet 26 strikes onto the top wall of chamber 1 and passes all around the latter, through passages 24 and thence inwardly to and through the central opening 25 of the baffle plate 21 immediately below chamber 1. The hot air passing through this opening 25 strikes onto the top wall of chamber 2 and passes in all directions around the latter, through the air passages 24 to and through the central opening 25 of the baffle plate 21 immediately below chamber 2. The air passing through the opening 25 of this baffle plate strikes onto the top wall of chamber 3 and passes in all directions around said chamber and through air passages 24 to and through the central opening 25 of the baffle plate 21 immediately below chamber 3. The air passing through the opening 25 of said baffle plate likewise passes all around chamber 4 and through the passages 24 below the latter to the outlet 28. It will thus be seen that the baffle plates 21 provide a separate hot air jacket for each drying chamber, said hot air jackets being connected in series, with the hot air entering the air jacket of each chamber at a point near the middle of the latter and leaving said air jacket also at a point near the middle of the chamber so that each drying chamber is thoroughly and uniformly

heated. The peat delivered to this apparatus still contains a quantity of water and as it passes through the heated chambers 1, 2, 3, and 4 the remaining water and the by-products referred to, are driven out of the peat and in order to collect and remove the same the top wall 6 of the chamber 1 is made with an outlet 30 connected by a pipe 31 with the inlet of a blower 32 whose outlet may be connected by a pipe 33 with a condenser or other apparatus for separating the ingredients of the vapors drawn off through the pipe 31. The low pressure produced by the blower 32 in the pipe 31 causes a current of air to flow into chamber 4 through spout 16 and thence through said chamber and connecting conduit 12 to chamber 3. From chamber 3 this current of air flows through connecting conduit 11 into chamber 2 and thence through connecting conduit 10 into chamber 1. From chamber 1 this current of air passes out through off-take pipe 31. The vapors given off by the peat while passing through heated chambers 1, 2, 3, and 4 are entrained by this current of air and pass off through pipe 31 with it.

To the under side of bottom wall 18 is fixed a pair of hangers supporting a shaft 34 carrying at its outer end a pulley 35 through which said shaft may be driven by a belt, and at its inner end a beveled pinion 36 driving a beveled gear 37. The beveled gear 37 is fastened to the lower end of a centrally disposed vertical shaft 38 extending upwardly through chambers 1, 2, 3 and 4. Within each drying chamber the shaft 38 has fixed to it a spider 39 comprising a hub and three radial arms. The arms of each spider 39 are provided with downwardly projecting tines or bars so that the spider constitutes a rake which rotates within its drying chamber as the shaft 38 is rotated. The shaft 38 is driven in the direction of the arrow, Fig. 4, and the spider rakes 39 turning with it serve to propel the peat slowly toward the outlet opening of the chamber from the point where the peat enters the latter.

As stated above the inlet 8 of each drying chamber is angularly offset with relation to the outlet of the chamber, and said inlet is offset in the direction indicated by the arrow in Fig. 4, such an angular distance that the peat falling into the chamber lands on the floor of the latter alongside of the outlet opening of said chamber. Thus each arm of the rotating rake 39 first engages the peat immediately after said arm passes the outlet opening of the chamber and the peat must travel nearly the complete circuit of the chamber before it reaches the outlet thereof.

In order that the peat will be thoroughly broken up and dried while it is passing

through the apparatus I provide the bottom wall of each chamber with a plurality of upwardly projecting spikes 40 between which the tines of the rakes pass.

- 5 The peat to be treated is dumped into the hopper 12 and when the valve 13 is rotated it falls by gravity into chamber 1 through which it is slowly propelled by the spider rake 39 thereof to the outlet of said chamber.
- 10 When the peat in chamber 1 reaches the outlet of the latter it falls free and clear through the conduit 10 into chamber 2. From the chamber 2 the peat falls free and clear into chamber 3 and thence into chamber 4 from which it is discharged in a completely dry state through the spout 16.

What I claim is:—

1. A drier and separator of the character described comprising a series of superimposed and communicating compartments each made with an entrance and an exit for the material that is to be treated, the exit of each compartment except the last one of the series discharging into the next compartment below it at a distant point from the exit of the latter; a shaft extending through all of said compartments; a rake in each compartment carried by said shaft, said rake having downwardly extending tines; upwardly extending tines upon the floor of each compartment between which the tines of the rake of said compartment pass as said rake rotates with the shaft; means for driving said shaft; means for heating the material while it is passing through said compartments; and means for drawing off from said compartments the vapors given off by said material.

2. A drier of the character described comprising a plurality of communicating and superimposed cylindrical chambers each made with angularly off-set inlet and outlet; a hot air jacket for each chamber, said hot air jackets being connected in series; a hot air supply pipe connected with the air jacket at one end of said series; an air outlet from the jacket at the other end of said series; a shaft extending through all of said chambers; means within each chamber and connected with said shaft for moving the material being treated from the point where it enters the chamber to the

outlet of the latter, and means for removing from said chambers the vapors given off by the heated material.

3. A drier of the character described comprising a plurality of communicating and superimposed cylindrical chambers each made with angularly off-set inlet and outlet; a hot air jacket for each chamber, said jackets being connected in series; a hot air supply pipe connected with the jacket at one end of said series; an air outlet communicating with the jacket at the opposite end of said series; a shaft extending through all of said chambers; a rake within each chamber connected with said shaft; projections upon the interior of each chamber cooperating with the rake thereof to break up the material; an outlet communicating with one of said chambers, and means for drawing off through said outlet the vapors or the like produced in the chambers.

4. A drier of the character described comprising a plurality of communicating and superimposed cylindrical chambers each made with angularly off-set inlet and outlet; a hot air jacket for each chamber, said jackets being connected in series; a hot air supply pipe connected with the jacket at one end of said series; an air outlet communicating with the jacket at the opposite end of said series; a shaft extending through all of said chambers; a rake within each chamber connected with said shaft; an outlet for vapors and the like communicating with one of said chambers; means for drawing off through said outlet the vapors or the like produced in the chambers, a conduit connected with the inlet of the uppermost chamber through which the material to be treated is supplied to the apparatus, and means normally closing said conduit but adapted to be manipulated to permit of the entrance of fresh material, the outlets of each two adjoining chambers being angularly offset relatively so that the material makes nearly a complete circuit of each chamber before it reaches the outlet thereof.

In testimony whereof I have affixed my signature.

CHARLES D. JENKINS.