O. E. MOULTON.

PEAT CUTTING MACHINE.

APPLICATION FILED AUG. 24, 1908.

928,995.

Patented July 27, 1909.

3 SHEETS—SHEET 1.

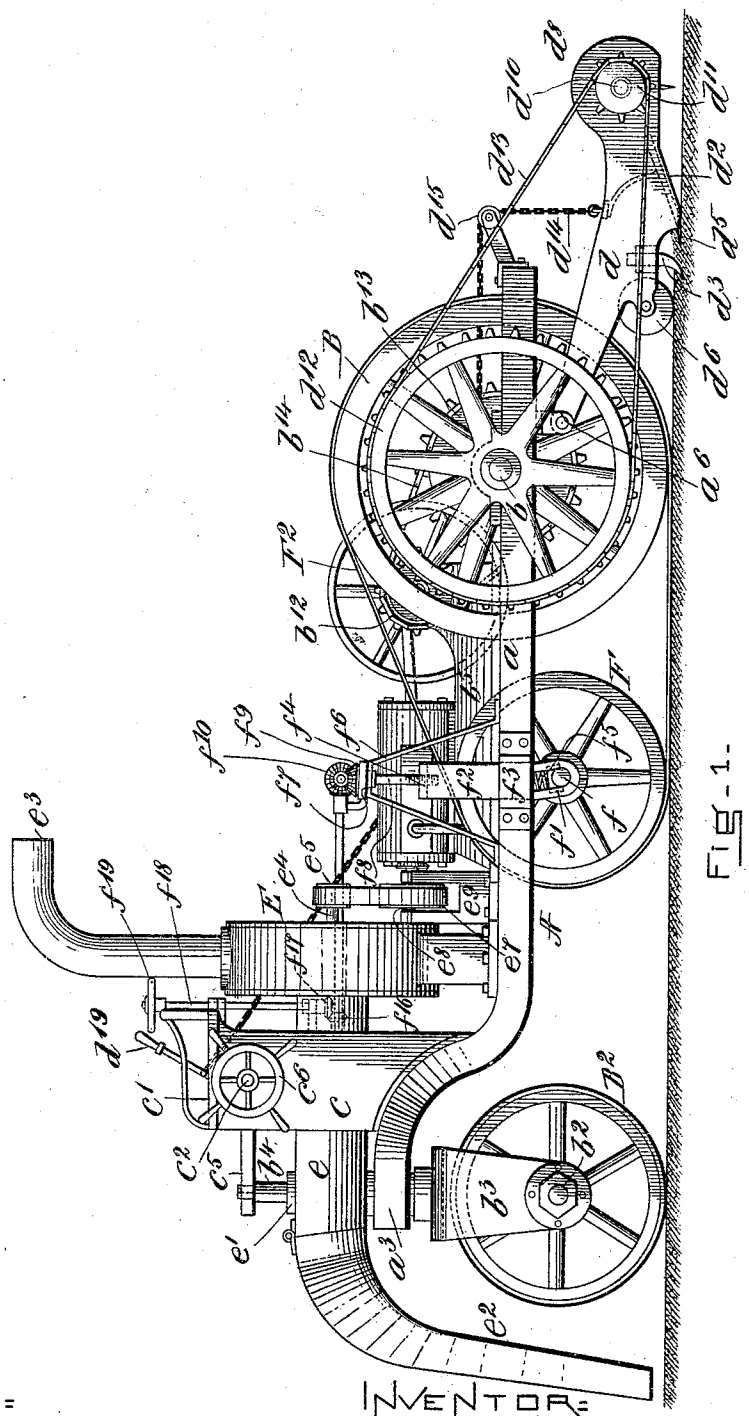


Fig. 1.

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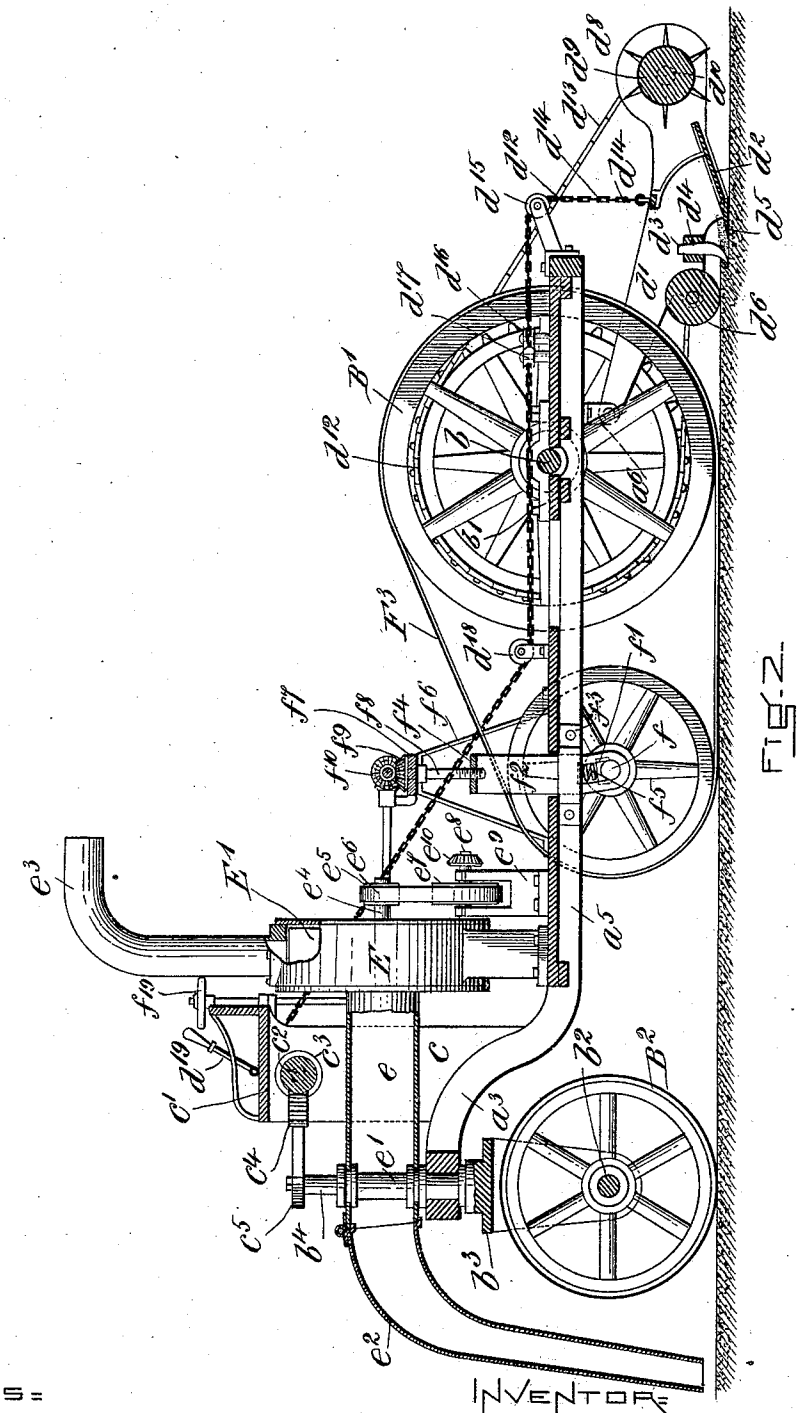


FIG. 2.

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3 SHEETS—SHEET 3.

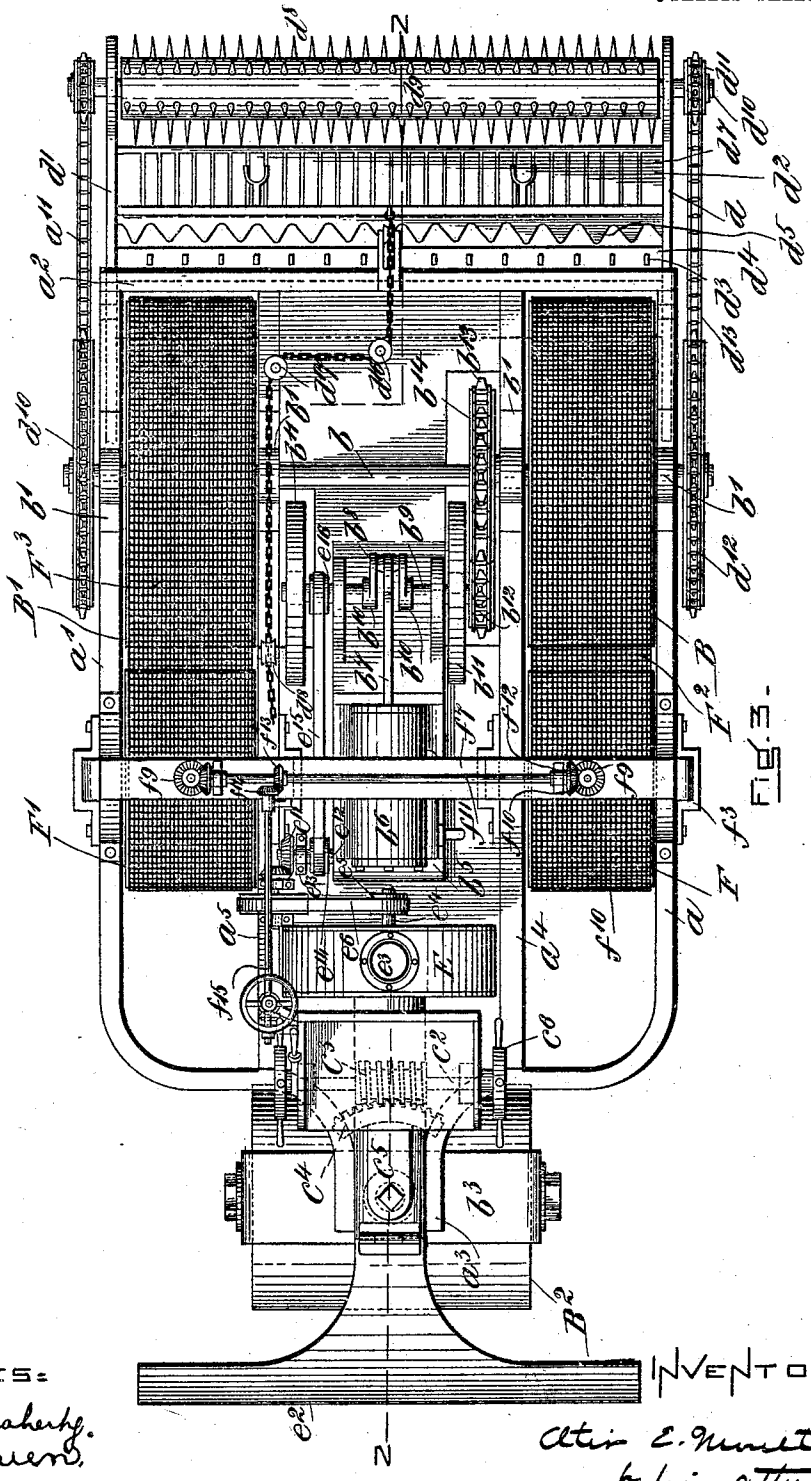


Fig. 3.

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UNITED STATES PATENT OFFICE.

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PEAT-CUTTING MACHINE.

No. 928,995. Specification of Letters Patent. Patented July 27, 1909.

Application filed August 24, 1908. Serial No. 449,917.

To all whom it may concern:

Be it known that I, OTIS E. MOULTON, of Dover, in the county of Strafford and State of New Hampshire, a citizen of the United States, have invented a new and useful Improvement in Peat-Cutting Machines, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

My invention relates to a machine to be used in connection with the initial gathering of peat from the bed or bog in which the peat is located preparatory to compressing the peat when dried into the form of fuel, which expedient may be accomplished, as is well known to those skilled in the art.

The essential object of my invention is to facilitate and make more economical the initial gathering and preparation of the peat.

My invention relates essentially to a machine, and preferably to a self-propelling machine, adapted to pass over a bed or bog of peat and during the passage of the machine cut the peat from the bed and at the same time comminute or reduce into fine particles that portion of the peat which has been cut preparatory to drying it, the drying being accomplished by leaving the fine particles of peat on the surface of the bed to dry in the sun, after which it may be taken up, the machine embodying my invention pertaining in part to a means by which the taking up of the peat may be accomplished and this moreover at the same time a fresh supply of peat is being cut and prepared for drying.

My invention embodies, also, in structural detail various elements which make the machine an effective one, all of which can best be seen and understood by reference to the drawings, in which—

Figure 1 shows the machine in side elevation. Fig. 2 is a cross section of the machine on the line 2—2 of Fig. 3, and Fig. 3 shows the machine in plan.

In the drawings:—A represents the frame or body of the machine. This consists of side bars a, a^1 connected by a rear end cross bar a^2 and at the front end of the machine turned inwardly to form a forward-extending tongue a^3. Interposed between the forward and rear end portions of the frame and forming an inside frame support are longitudinally-extending bars a^4 connected by cross bars a^5. These bars a^4, a^5 act to strengthen the frame and assist also in supporting the various parts to which I shall hereinafter refer.

The frame A and parts supported thereby are mounted upon wheels or rather rolls B, B^1 and B^2. Of these rolls the rolls B, B^1 support the rear end portion of the machine. They are arranged in pairs, widely separated from one another, and are fixed to a shaft b which is journaled to turn within boxes b^1 fixed to the frame.

The roll B^2 supports the forward end portion of the machine and acts also as a steering roll. The roll is arranged to turn upon a shaft or axis b^2. Extending around the roll and connecting with the ends of its shaft b^2 is a yoke b^3. Attached to this yoke and extending upwardly therefrom is what may be termed a center-pin b^4 which passes through the tongue a^3 of the frame. This pin b^4 forms the axis on which the steering roll B^2 is adapted to turn. Both the rolls B, B^1 and the roll B^2 are wide rolls presenting a wide extent of bearing surface. The peat over which the rolls are adapted to pass is usually of a soft boggy nature and it is desirable to have the rolls present as wide a bearing surface as possible to prevent the rolls as they pass over the peat from sinking too far into it. The rolls are also arranged whereby the surface left uncovered by the rolls B, B^1 in the operation of the machine as it passes over the bed of peat may be covered by the roll B^2 for it is desirable preparatory to cutting the peat that the surface to be cut should be made as smooth and even as possible.

The machine is driven by power applied to the shaft b for turning the rolls B, B^1. Mounted about the middle of the frame is an engine-supporting bed b^5 on which is arranged an engine b^6 containing a piston (not shown) having a piston rod b^7. The engine b^6 may be of any kind capable of furnishing sufficient motive power for driving the machine and operating certain of the parts to which reference will hereinafter be made. The piston rod b^7 connects with a crank b^8 arranged upon a crank shaft b^9 mounted to turn within lugs b^{10} extending from the engine bed b^5. b^{11} are fly wheels arranged upon the crank shaft. On the end of this shaft is a sprocket wheel b^{12}. This connects with a sprocket wheel b^{13} on the shaft b by a

sprocket chain b^{14}. By means of their connections the rolls B, B^1 may be turned by the engine in a forward or reverse direction when the machine will be driven forward or backward.

For the convenience of one driving and steering the machine there is arranged on the forward end portion of the frame a box c supporting a seat c^1. In the sides of the box c supporting the seat is arranged a shaft c^2. On this shaft within the upper portion of the chamber of the box is arranged a worm c^3. Intermeshing with this worm is a geared segment c^4 carried by an arm c^5 which is fixedly secured to the end of the center-pin b^4 that forms the axis upon which the steering roll B^2 is adapted to turn. Arranged also upon the shaft c^2 outside the box c and accessible from the seat c^1 is a windlass c^6. As this windlass is turned in one direction or the other for turning the shaft c^2 the motion of the shaft will through the worm c^3 be transmitted to rock the segment c^4 when the arm c^5 connecting with the segment will operate through the center-pin b^4 and connecting yoke to turn the roll B^2 in one direction or the other for steering the machine.

Referring now to the means by which the peat is cut during the running or operation of the machine: Pivotally attached to the rear end portion of the frame by lugs a^6 dependent from the sides thereof is a frame support consisting of side plates d, d^1 and bottom plate d^2 connecting the sides. This support carries the knives and cutter by which the peat is cut, and also the shredder by which the peat after it has been cut is broken up into fine particles preparatory to drying.

The initial cutting of the peat is effected by means of a series of knives d^3 attached to a bar d^4 fixed in the bottom of the frame support. The form and arrangement of these knives is such that as the support trailing behind the machine is drawn over the surface of the peat, the knives will act to score the prepared surface of the peat by deep parallel incisions cut in it. Back of the knives d^3 and arranged also in the bottom of the trailing frame support is a slicing knife d^5. This knife is provided with a serrated or toothed cutting edge by which the knife may slice the scored surface of the peat. The weight of the frame support and connecting parts will keep the cutters and especially the slicing knife d^5 in proper operative engagement with the peat, yielding, however, to any obstruction.

In order that the knives may cut into the peat a determinate distance or may not cut too deeply therein, there is arranged in the frame support a roller d^6 which is adapted to run along the surface of the peat and by its bearing act to maintain the frame support in such position that the cutters carried by it will not sink too far into the peat, but will operate only to slice or dislodge a thin portion of the top surfacing thereof. Attention is also directed to the fact that the slicing knife d^5 is located at the lower forward end of the bottom plate d^2 of the frame support so that as the peat is cut from the bed by the slicing knife it will pass up over the bottom plate, which as may be noted inclines upwardly away from the surface of the bed and is preferably provided with ribs d^7 to reduce the friction of the peat passing over it. Arranged also between the two sides of the frame support d is what may be termed a shredder d^8. This comprises a toothed roll d^9 arranged upon a shaft d^{10} journaled in the sides of the support, and the disposition of this shaft and the arrangement of the roll is such that when the roll is rotated its teeth will just clear the top edge of the bottom plate d^2 of the frame support with the effect that the teeth will act to comminute or tear into fine particles the peat passing over the plate from the slicing blade, in which condition the peat will be thrown upon the surface of the bed back of the machine where it will be left to dry. The shredder d^8 is operated by means of sprocket wheels d^{11} arranged on the ends of its shaft which connects with sprockets d^{12} on the ends of the shaft b by means of connecting sprocket chains d^{13}. The shaft b, as before described, is turned by the engine for driving the rolls B, B^1.

The normal disposition of the frame support bearing the peat-cutting knives and shredder is, by reason of the manner in which the support is secured to the frame of the machine, a normally operative one. Under certain circumstances it may be desirable to lift the support into an inoperative position or position where the knives will no longer operate to cut the peat. For this purpose there is secured to the support a chain d^{14} which passes upwardly over a pulley d^{15} arranged upon the rear end portion of the frame, thence forward around the pulleys d^{16}, d^{17} and under a pulley d^{18}, all of which pulleys are attached to the frame, and thence upwardly to connect with a hand lever d^{19} pivoted to the box or seat support by which the lever may be accessible from the seat. As this lever is turned the frame support bearing the peat-cutting blades will through the connecting chain be raised into an inoperative position.

Referring now to the means for lifting the peat after it has been dried: Mounted upon the frame of the machine just back of the seat support c is a casing E containing a rotary fan or blower E^1. From the forward part of this casing there extends a pipe e which may be supported in part by the center-pin b^4 extending through the tongue of

the frame and on which the steering wheel is adapted to turn, the center-pin being extended to pass through this pipe (the pin impeding the passage through the pipe only in part), when the pipe may be secured thereto by a flanged sleeve e^1 loosely arranged upon the center-pin and resting upon the tongue of the frame. Attached to the outer end of the pipe e and dependent therefrom is a wide flaring nozzle e^2. This nozzle extends down in front of the steering roll B^2 to approach very near the surface of the bed of peat or so far in fact that the suction induced by the fan will act to draw the dry peat from the surface of the bed into the nozzle whence it passes through the pipe e into the chamber of the fan casing out of which it is thrown by the fan through an outlet pipe e^3. This outlet pipe e^3 is preferably of a length to connect with or empty into a vehicle (not shown) suitable for holding the dry peat as it is being gathered. This vehicle may be attached to the rear end of the machine and trail after it during its operation.

For the purpose of operating the fan or blower E^1 there is provided the following mechanism:—The fan or blower is mounted upon a shaft e^4 having arranged thereon a pulley e^5. This pulley by a belt e^6 connects with a pulley e^7 arranged upon a shaft e^8 turning in a forked bearing e^9 fixed to the frame of the machine. On the end of the shaft e^8 outside of the bearing e^9 is arranged a gear e^{10} which, as may be seen by reference to Fig. 3, meshes with the gear e^{11} arranged upon a shaft e^{12} journaled within the bearing e^{13} fixed to the frame. On the shaft e^{12} is arranged a pulley e^{14} which connects by a belt e^{15} with a pulley e^{16} arranged upon the crank shaft b^9. It is mechanically obvious that by the aforedescribed connecting chain of mechanism the turning of the crank shaft b^9 by the engine will act to turn the shaft e^4 and operate the fan or blower E^1 contained within the casing E.

In connection with the above described means for lifting the dried peat attention is especially directed to the fact that the means is so arranged in the machine and its operation is such that at the same time the machine is operating to cut and comminute a new supply or layer of peat preparatory to its being dried, the machine may also operate to lift from off the bed peat that has already become dried.

I have already referred to the fact that the rolls bearing the body of the machine are made to present as large a bearing surface as possible to prevent the rolls from sinking too far into the bed of peat. This is done by making the rolls as wide as possible, but however wide they may be made the machine under some circumstances will sink too far into the peat unless an auxiliary bearing is provided and this I have shown. The auxiliary bearing consists of rolls F, F^1 arranged upon a shaft f about midway the machine between the main bearing rolls B, B^1 and the steering roll B^2 and in alinement with the rolls B, B^1. Around the respective sets of rolls B, F; B^1, F^1 are tightly wrapped belts F^2, F^3 preferably made of some strong woven material and which travel around the respective rolls during the operation of the machine. Thus arranged and operating, portions of the belts between the respective rolls will continuously bear against the surface of the peat and thereby provide large bearing surfaces.

Under certain circumstances it may be unnecessary to use the auxiliary bearings. Accordingly there is provided means by which the rolls F, F^1 may be raised, thereby lifting the major portions of the belts away from the surface of the peat. As may be observed, the shaft f on which the bearing rolls F, F^1 are mounted is contained within boxes f^1 mounted in the slotted ends of hangers f^2 arranged to slide vertically in brackets f^3 affixed to the bars a, a^1, a^4, a^5 of the frame of the machine and dependent from a common connecting head bar f^4. The boxes f^1 located in the ends of the hangers are preferably yieldingly maintained therein by springs f^5 arranged in the slotted ends of the hangers and bearing against the boxes which are slidably mounted thereon, by which means the rolls F, F^1 when in operation holding taut the belts F^2, F^3, may yield slightly to any slight obstruction.

Mounted upon the end bars of the frame and extending above the head bar f^4 are brackets f^6 rigidly supporting a cross bar f^7. In this bar f^7 there are mounted to turn members f^8 which depend to have threaded connection with the head bar f^4 supporting the hangers f^2. On the ends of the members f^8 are arranged bevel gears f^9 which bear against the bar f^7 and by which the members are turned. For operating the gears f^9 there intermesh therewith bevel gears f^{10} arranged upon a shaft f^{11} journaled in bearings f^{12} in the bar f^7. Arranged also upon the shaft f^{11} is a bevel gear f^{13} meshing with which is a bevel gear f^{14} arranged upon the end of a shaft f^{15}. On the end of this shaft f^{15} is a bevel gear f^{16} which meshes with a gear f^{17} arranged upon the lower end of a shaft f^{18} mounted to turn in bearings affixed to the box supporting the seat of the machine. On the top end of this shaft and accessible from the seat is a hand-wheel f^{19}. It is apparent that this hand-wheel, as it is turned in one direction or the other, will act through the aforesaid connecting chain of mechanism to turn the members f^8 for lifting or lowering the head bar f^4 thereby causing the hangers f^2 to slide

in their respective bearings and moving the rolls F, F^1 with the belts F^2, F^3 wrapped round them into or out of operative engagement with the surface of the peat.

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

1. In a machine of the character specified, a body adapted to pass over a bed of peat, and carried thereby means for removing the peat from the bed, and means for breaking up the peat removed from the bed.

2. In a machine of the character specified, a body adapted to pass over a bed of peat, and carried thereby means for removing the peat from the bed, and means for breaking up the peat removed from the bed and restoring it thereto.

3. In a machine of the character specified, a self-propelling body, and carried thereby means for removing the peat from the bed, and means for breaking up the peat removed from the bed.

4. In a machine of the character specified, a self-propelling body, and carried thereby means for removing the peat from the bed, and means for breaking up the peat removed from the bed and restoring it thereto.

5. In a machine of the character specified, the combination with a body adapted to pass over a bed of peat, of means carried thereby for slicing off the top surface of the bed, and means carried also by said body for comminuting or breaking up the removed portion of the bed and redepositing it on the surface of the bed preparatory to drying.

6. In a machine of the character specified, the combination with a body adapted to pass over a bed of peat, of a frame support attached to said body, means mounted within said frame and adapted to have operative engagement with the surface of the bed for separating a layer of peat therefrom, and means for breaking into parts or particles the peat separated from the bed as aforesaid and restoring it thereto preparatory to drying.

7. In a machine of the character specified, the combination with a body adapted to pass over a bed of peat, of a cutter, means supporting said cutter from said body whereby it may be brought into operative engagement with the surface of the bed and during the passage of the body over the bed remove a layer of peat therefrom, after the cutting of said peat means whereby the cut layer thereof may be elevated away from the surface of the bed, and means for breaking up the peat elevated as aforesaid and restoring it to the surface of the bed preparatory to drying.

8. In a machine of the character specified, the combination with a body adapted to pass over a bed of peat, of a supporting frame pivotally secured to said body and arranged to be drawn thereby over the surface of the bed, and carried by said frame means for removing the peat from the bed, and means for breaking up the peat removed from the bed and restoring it thereto.

9. In a machine of the character specified, the combination with a body adapted to pass over a bed of peat, of a frame support attached to said body and arranged to be drawn thereby over the surface of the bed, a cutter borne by said frame for cutting the peat, a shredder mounted in said frame and adapted to tear into fine particles the peat cut from the bed, and means for operating said shredder.

10. In a machine of the character specified, the combination with a body adapted to pass over a bed of peat, of a frame pivoted thereto and adapted to be drawn by the body over the surface of the bed, knives mounted in said frame for scoring the surface of the bed, a cutter mounted therein for cutting the surface of the bed thus scored, a table over which the cut peat is adapted to pass, a toothed roll for breaking into particles the peat passing over said table and restoring it to the bed preparatory to its drying thereon, and means for operating said roll.

11. In a machine of the character specified having a body, wide bearing rolls on which said body is adapted to pass over a bed of peat, an auxiliary roll adjustably connecting with said body and having bearing contact with the surface of said bed, a belt passing around said rolls and adapted to bear in part during the running thereof against the surface of the bed for providing an auxiliary bearing for supporting said machine, and means whereby one of said rolls with the belt wrapped around the same may be thrown into or out of bearing contact with the surface of said bed.

12. In a machine of the character specified having a body, wide bearing rolls on which said body is mounted to pass over a bed of peat, an auxiliary roll connecting with said body, means for yieldingly supporting said roll from said body whereby it may have bearing contact with the surface of said bed, a belt wrapped around said auxiliary roll and connecting with one of said main bearing rolls, and means whereby said auxiliary roll with the belt wrapped around it may be thrown into or out of bearing contact with the surface of the bed.

13. In a machine of the character specified, the combination with a body, of a set of wide bearing rolls for supporting said body in part whereby it may pass over and smooth a bed of peat, a wide bearing steering roll arranged to cover that portion of the bed uncovered by said bearing rolls, means carried by said machine for removing a portion of the bed thus prepared, and means also car-

ried by said machine for comminuting or reducing into fine particles the peat removed from the bed as aforesaid and restoring it thereto preparatory to drying the same.

14. In a machine of the character specified, the combination of means for smoothing a bed of peat, means for cutting a layer of peat from the surface of the bed thus smoothed, and means for reducing into fine particles the cut layer of peat and restoring it to the surface of the bed preparatory to drying the same.

15. In a machine of the character specified, the combination with a self-propelling body adapted to pass over a bed of peat, of means for cutting the peat from the bed, means for comminuting or reducing the peat into fine particles preparatory to drying the same, and means for gathering the peat after it has become dried.

16. In a machine of the character specified, the combination with a self-propelling vehicle adapted to pass over a bed of peat, of means for cutting the peat from the bed, means for comminuting the cut peat and restoring it to the surface of the bed preparatory to its being dried, and means for gathering the peat after it has become dried, the same comprising a pipe connection arranged in the forward end portion of the machine, a nozzle connecting therewith and extending down in close proximity to the surface of the bed in front of the machine, and means for inducing a suction draft in said pipe and nozzle whereby the dried peat may be raised through the same from off the surface of the bed.

17. In a machine of the character specified, the combination with a self-propelling vehicle adapted to pass over a bed of peat, of means for cutting the peat from the bed, means for comminuting the cut peat and restoring it to the surface of the bed preparatory to its being dried, and means for gathering the peat after it has become dried, said means comprising a fan casing, a fan contained within said casing, a pipe outlet therefrom, a pipe inlet thereto, a nozzle attached to said inlet pipe and extending down forward of the machine, and means for operating said fan whereby the dried peat may be raised by suction through said nozzle and inlet pipe to pass into the chamber of the fan casing and be expelled from the same by the fan through said outlet pipe.

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In the presence of—
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