Nov. 10, 1953 F. E. PIERCE 2,658,290

PEAT MILLING AND HANDLING MACHINE

Filed Jan. 13, 1951 4 Sheets-Sheet 1

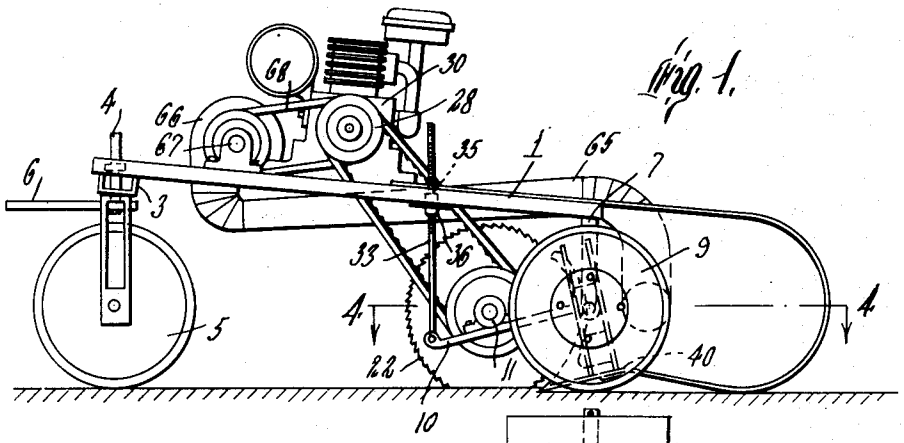


Fig. 1.

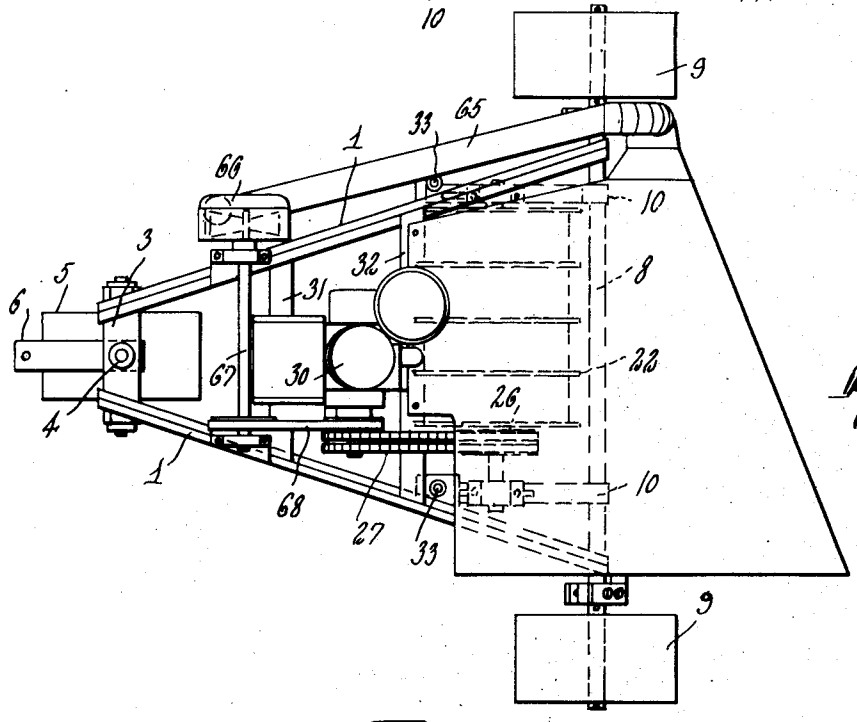


Fig. 2.

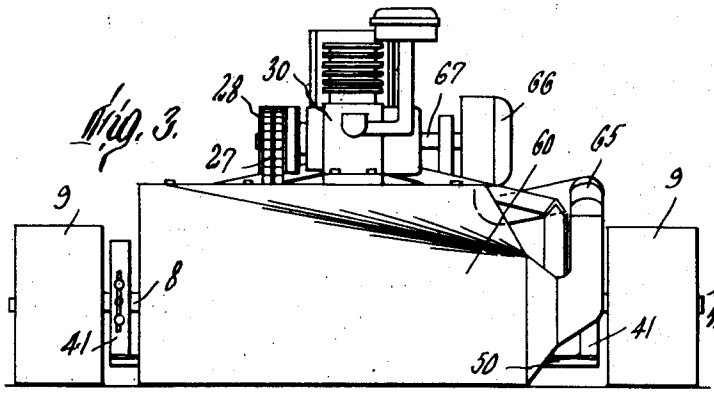


Fig. 3.

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PEAT MILLING AND HANDLING MACHINE

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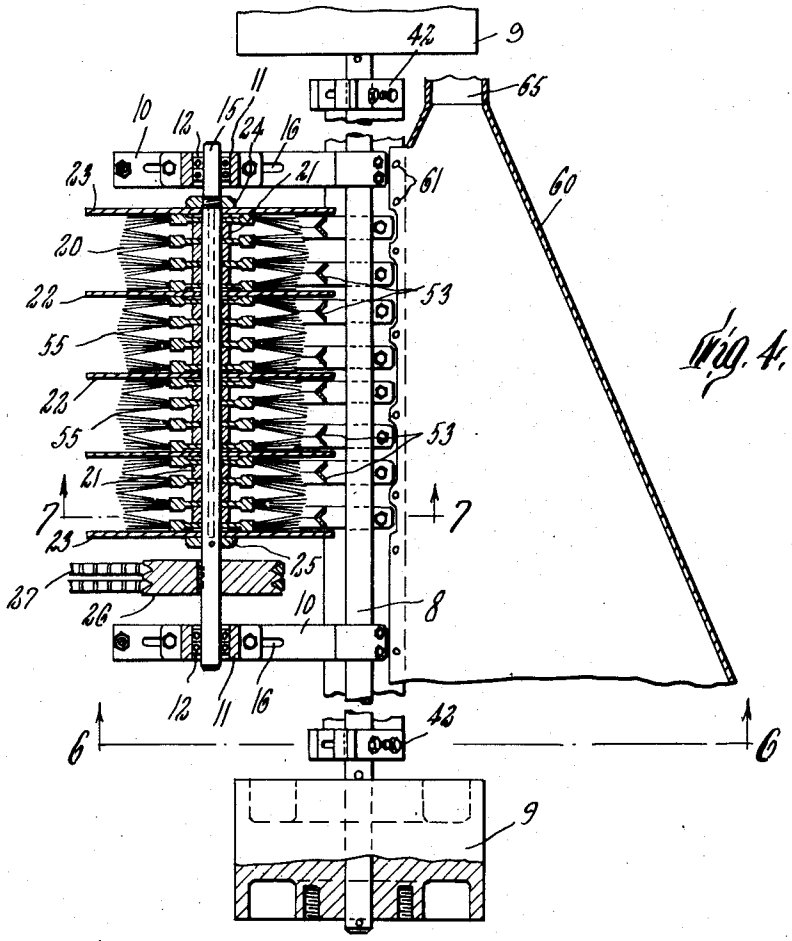


Fig. 4.

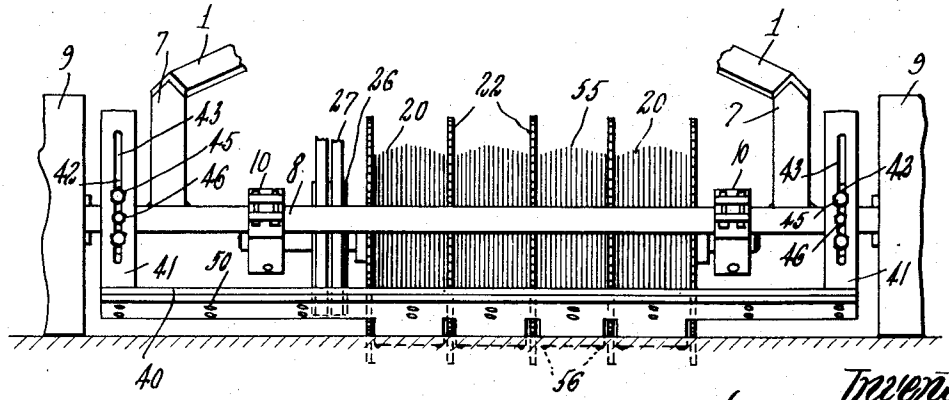


Fig. 5.

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PEAT MILLING AND HANDLING MACHINE

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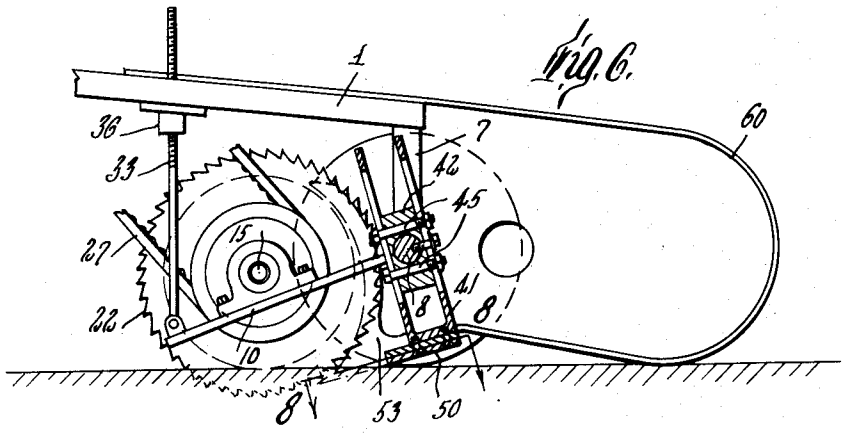


Fig. 6.

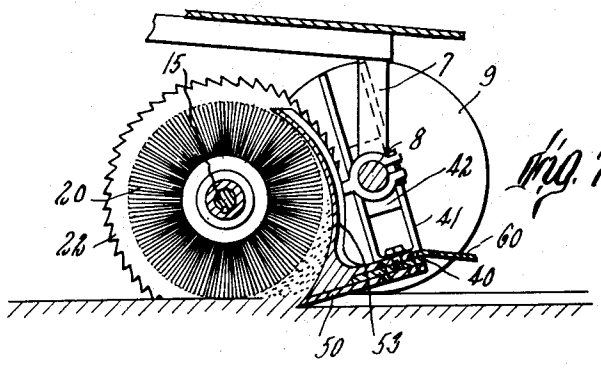


Fig. 7.

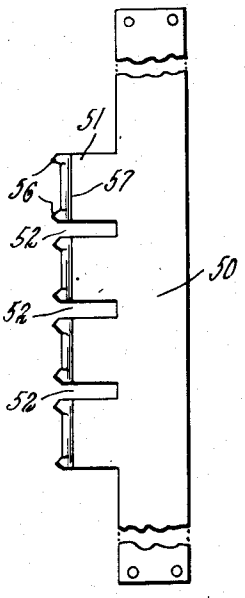


Fig. 8.

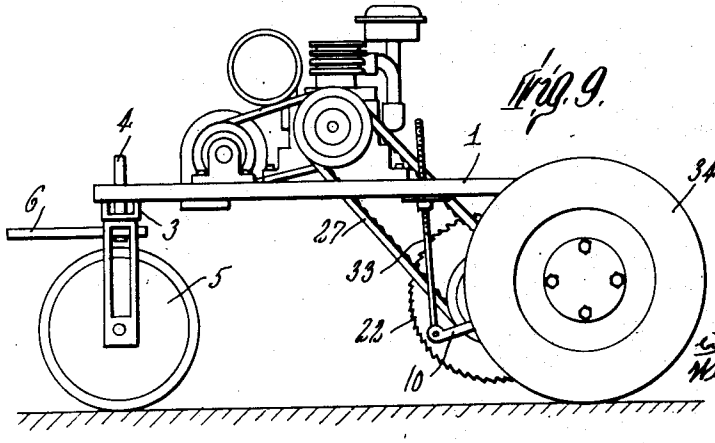


Fig. 9.

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PEAT MILLING AND HANDLING MACHINE

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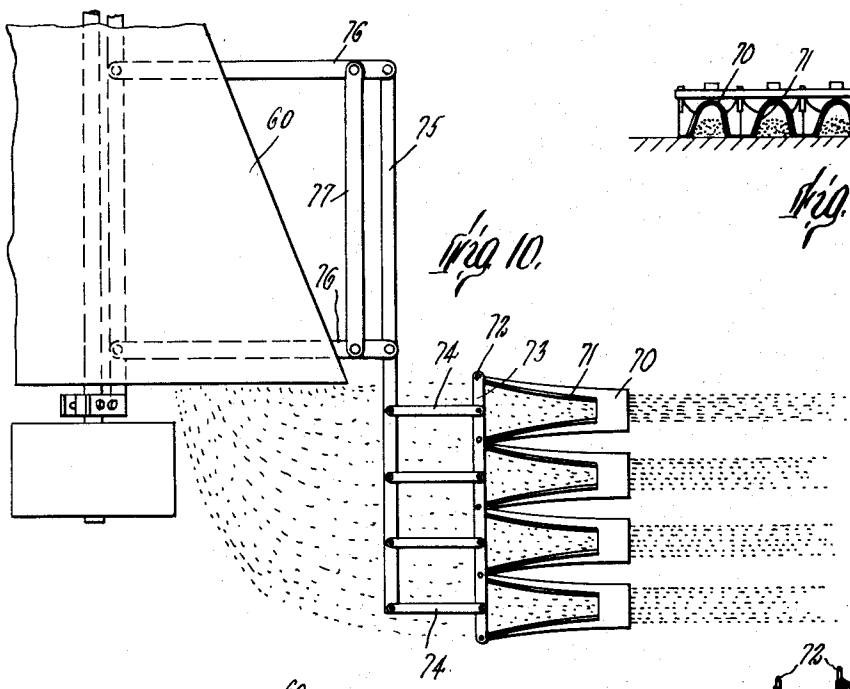



Fig. 10.




Fig. 12.

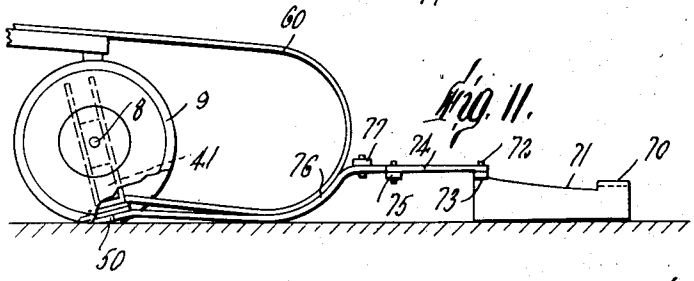



Fig. 11.

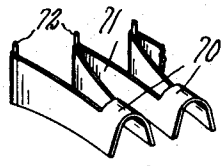
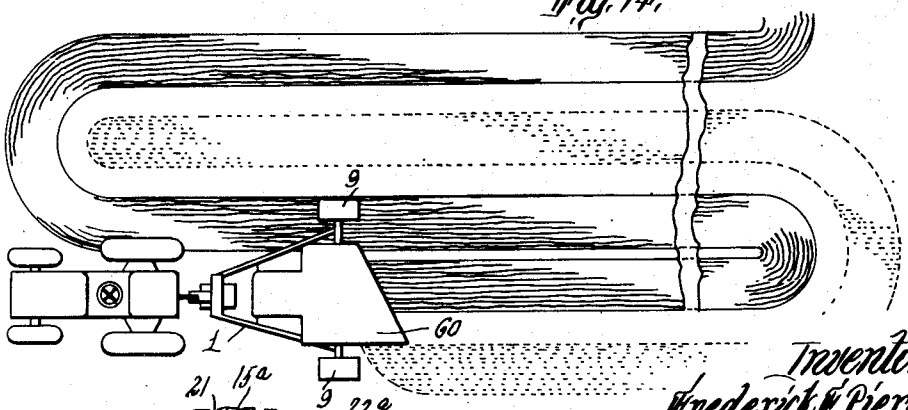



Fig. 13.

Fig. 14.



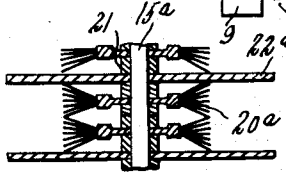




Fig. 15.

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# UNITED STATES PATENT OFFICE

2,658,290

## PEAT MILLING AND HANDLING MACHINE

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Application January 13, 1951, Serial No. 205,877

6 Claims. (Cl. 37—3)

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This invention relates to machines for milling and handling peat and has for an object to substantially reduce the cost of cutting and processing peat into commercial form.

A further object is to provide for the cutting of the peat from the surface of a peat deposit and "milling," or reducing it to commercial and so substantially uniform size as to eliminate all necessity of a hammer mill or other grinding process, in an expeditious and economical manner and by provision of effective means of adjustment to give approximate control of the average size of the peat particles to meet the varying needs of peat users.

A further object is to deposit the milled peat for further drying, and preferably in windows, on a substantially dry surface adjacent to that from which the peat was cut and by the removal of which a relatively wet surface was exposed.

Still another object is to provide means by which root growth, even of substantial size, is cut away so that it does not interfere with the harvesting and milling operations.

A further object is to provide mechanism for "scurfing" or "scalping" a peat deposit to remove weeds and undergrowth from the surface of the deposit preparatory to removing peat therefrom.

For a more complete understanding of this invention, reference may be had to the accompanying drawings in which

Figure 1 is a side elevation of the machine embodying the invention.

Figures 2 and 3 are top plan and rear end elevational views, respectively, of the machine.

Figure 4 is a detail sectional view to a larger scale on line 4—4 of Figure 1.

Figure 5 is a fragmentary rear elevational view, the spreading chute or cone being omitted.

Figures 6 and 7 are detail sectional views on lines 6—6 and 7—7, respectively, of Figure 4.

Figure 8 is a plan view of a baffle plate knife.

Figure 9 is a side elevation of the machine with parts removed, and provided with transporting wheels.

Figure 10 is a top plan view of the rear portion of the machine showing the windrowers in position.

Figure 11 is a side elevation of the parts shown in Figure 10.

Figure 12 is a rear elevational view of the windrowers.

Figure 13 is a fragmentary perspective view of the same.

Figure 14 is a somewhat diagrammatic top plan view of the machine on the peat deposit

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and showing a desirable path of movement of the machine.

Figure 15 is a fragmentary sectional view similar to a portion of Figure 4, but showing a modified construction particularly intended for use in scurfing or "scalping" a peat deposit in preparation for removal of the peat.

Referring first to Figures 1 and 2, 1 indicates side rails of a triangular frame which diverge from a forward connecting member 3 which carries pivoted thereto on a vertical axis 4, a central steering wheel 5. A connecting bar 6 extends forwardly from the member 3 and is adapted to be connected to a crawler tractor or other suitable means by which the mechanism may be pulled forwardly. The rear end portion of the frame members 1 are connected to or formed with uprights 7 (see Figures 6 and 7) to which a rear axle member 8 is secured. This axle member has journaled on opposite end portions, broad tread wheels 9, which, together with the steering wheel 5, may support the frame for travel over the surface of a peat deposit, these wheels being of substantial width so that they may be supported without cutting into the relatively soft surface portion of the deposit.

The axle 8 has attached thereto adjacent to opposite ends, a pair of arms 10 which extend forwardly thereof, and intermediate to their ends these arms 10 are provided with bearings 11 within which is journaled, as on ball bearings 12, a shaft 15. These bearings 11 may be adjusted lengthwise of the arms 10 as by the bolt and slot connections at 16, this shaft 15 being arranged substantially parallel to the axle 8. Upon this shaft 15 are secured, spaced therealong, circular wire brushes 20, ring spacers 21 on the shaft 15 and positioned between the brushes, spacing them as desired. At intervals between adjacent pairs of brushes are arranged circular saws 22, there being a similar saw 23 at each end of the series of brushes. These parts are keyed to the shaft 15 and are suitably secured against axial motion thereon, to this end, a nut 24 being shown threaded on a portion of the shaft 15 adjacent to one end and pressing the brushes, spacers and saws against a collar 25 fixed to the opposite end portion of the shaft 15. Means are provided for rotating this shaft 15 with its brushes and saws, and such means, as shown, comprises a belt pulley 26 keyed to the shaft 15 and connected through chain belts 27 to a drive pulley 28 of an internal combustion engine 30. This engine 30 is mounted upon

suitable cross frame members 31 and 32, bridging across the frame members 1.

The height of the shaft 15 may be adjusted and to this end, the forward ends of each of the arms 10 has pivoted thereto the lower end of a rod 33 threaded at its upper portion and passing through suitable holes in the frame members 1. Nuts 35 and 36 threaded on the rod 33 and positioned above and below the respective frame members 1 may be employed to adjust and fix the vertical position of each of the rods 33 and thereby to adjust and fix the elevation of the shaft 15 and the parts carried thereby, so that the saws and brushes may be positioned as desired with respect to the surface of the peat deposit over which the mechanism is to be drawn.

In order that the mechanism may be transported with the brushes and saws out of contact with the ground and without requiring that the shaft 15 be lifted out of normal operating relation to the other parts, vehicle wheels 34 of larger diameter may be bolted to the outer faces of the wheel 9, as shown in Figure 9.

To the rear of the brushes and saws there is mounted a transverse support 40, and as shown this support 40 is secured to the lower ends of a pair of U-shaped frame members 41, each having a block 42 between its sides through which the axle 8 extends. These frame members 41 have longitudinally extending slots 43 therein, as shown best in Figure 5, through which clamping bolts 45 may extend and by which the U-shaped members 41 may be adjusted and secured, both lengthwise and angularly about the axis of the axle 8. An intermediate screw 46 extending through each of the slots 43 and threaded into the axle 8 will act with the bolts 45 to secure the parts in adjusted position.

This cross member 40 may have secured to its lower face a transverse blade 50 shown detached in Figure 8. This blade has forwardly projecting portions 51, each of a width to extend between a pair of adjacent saws 23 and spaced by slots 52 within which the outer edges of these saws are adapted to pass freely as shown best in Figure 5. To the upper face of the member 40 are secured curved baffles 53 of V cross section and with the apex of each V forwardly facing. These baffles are positioned adjacent to the saws and are spaced to permit escape of the milled peat between them.

It will also be noticed, particularly from Figures 4 and 5, that the brushes are so cut or ground as to leave central portions 55 between each pair of adjacent saws of larger diameter than portions closer to these saws, thus giving a somewhat scalloped effect in outline to the several brushes, and opposite to those portions of the brushes of smaller diameter and close to the saws, the plate 50 is provided with forwardly extending round pointed prongs 56. These prongs extend forwardly from the forward edge of the blade and between them this blade is beveled as at 57 to form a chisel edge. This bar is so adjusted angularly and lengthwise of the supports 41 that its forward edge extends to a desired depth into the peat deposit and closely back of the brushes. The extent to which this blade projects into the deposit will depend upon the character of the peat deposit and its dryness and ordinarily will be from one to five inches.

As the frame is drawn forward and the shaft 11, and the parts carried thereby, are rotated rapidly by the engine, the blade cuts and lifts a layer from the top face of the peat deposit into



the paths of motion of the saws and brushes, the action of the saws and brushes, which are rotating in counterclockwise direction as viewed in Figure 7, being to distintegrate the peat which is brought into contact therewith, while the action of the saws is to cut through roots and other similar obstructions, reducing the raised layer of peat to such short lengths that the rotary brushes complete the disintegration or milling of the peat as finely as may be desired.

The speed of rotation of the shaft 15 and the vertical adjustment thereof determine to a large measure the smallness of the disintegration of the peat and due to the scalloped edge effect of the brushes and the prongs and baffles which dig out the material adjacent to the saws, a substantially uniform particle size is produced, eliminating entirely the customary use of a hammer mill or other grinding means in preparing peat for the market. The shaft 15 may be rotated, for example, from 400 to 500 R. P. M., while the speed of travel of the mechanism along the surface of the peat deposit may be from three to five miles an hour.

The peat thus removed from the relatively dry bog surface and milled to the desired size is thrown backwardly between the baffles 53 into a chute or cone collector 60, the forward side of which is open, the lower edge of the collector at the opening being secured to the cross member 49 as by screws at 61, as shown in Figure 4. The upper wall of the collector 60 overlies and is similarly secured to the cross frame member 32 as shown in Figure 2.

The rear wall portion of this chute tapers at an angle of about 30° from parallelism with the axle 8 and the shaft 15, and extends completely across the length of the rotary brushes and saws. At its rearward end it extends substantially beyond the end of the set of brushes and saws, this end being open and permitting the milled peat to escape therefrom at one side of the path of motion of the mechanism as shown best in Figures 10 and 14.

In order to produce a flow of the milled peat in this manner, and further to dry and aerate it, a current of air may be blown lengthwise through the chute. To this end the small diameter end of the cone or chute may have connected thereto a pipe 65 which may extend forwardly and be hooked up to a blower at 66. This blower 66 may be mounted on a cross shaft 67 which may be connected for rotation by the engine 30, as through a belt drive 68. By varying the downward angle of the lip on the upper part of the discharge end of the cone chute and by increasing or decreasing the strength of the air blast through the chute, the milled peat may be deposited on the sun-dried surface at one side of the path of motion of the machine as wide and thinly as desired for fast drying. Thus as the mechanism is drawn forwardly along a predetermined path, the peat for a desired depth from the top surface of the deposit is cut and lifted and disintegrated by the brushes and saws and is then discharged to one side of the path from which it was taken and deposited upon the peat deposit along a path substantially parallel to that taken by the machine. Since the removal of the peat deposit from the surface removes the drier portion thereof, the newly exposed surface is wetter than the adjacent surface of the deposit, and if the milled peat were allowed to remain thereon, it would receive moisture by capillary action from the underlying relatively wetter ma-

terial. However, by depositing the milled peat onto the adjacent surface of the deposit, which has been exposed to the sun and air, it contacts only with a relatively dry surface and its further drying to a condition where it can be removed for storage is greatly facilitated.

It has been found desirable in some cases to shape this disintegrated peat into a succession of windrows, which shape is found to offer substantial resistance to wind and rain. When this is desired, the windrowing mechanism shown best in Figures 10 to 13 is preferably employed. This mechanism comprises sheet material which is cut and bent to the form shown in Figures 12 and 13, having inverted V portions **70** connected by more or less upright wall portions **71**. The wall portions **71** may be provided at their forward ends with upstanding posts **72** which may be engaged by a transverse bar **73**. This bar **73** may be connected by links **74** to a bar **75** which may be connected through a pair of bars **76** with the transverse frame member **40**. A further brace member **77** may be employed to stiffen the parts in such a manner that the windrowing device is dragged behind the milling mechanism and to one side where it acts upon the material discharged from the chute or cone **60**.

Mechanism may be employed to produce the initial scurfing or "scalping" of the peat deposit and thereby to remove weeds and undergrowth and exposing the peat surface for further treatment. In order to accomplish this, the cutter bar, the cone, or chute, and the windrowing device may be removed from the frame and a modified form of cutting and disintegrating mechanism shown in Figure 15 may be substituted for the mechanism carried by the shaft **15** as previously described. This modified mechanism may comprise a shaft **15***a* which may be substituted for the shaft **15**, this shaft having secured therealong rotary wire brushes **20***a*, preferably of somewhat smaller diameter than the brushes **20** and formed of heavier wire, and preferably with their outer ends arranged at substantially the same diametrical distance from the axis of the shaft **15***a*. At intervals along the shaft **15***a* are arranged the circular saws **22***a*, which preferably extend further outwardly from the brushes **20***a* than do the saws **22** and **23**. For example, the saws **22** and **23** may be substantially two inches greater in diameter than the brushes **20**, which may be, say, from twelve to fourteen inches in diameter, while the saws **22***a* may be, say, four inches larger in diameter than the brushes **20***a*. By treating the surface of the unworked deposit by the rotary mechanism shown in Figure 15, the weeds and underbrush are quickly cut away and may be cleared preparatory to removal and milling of the peat as by the mechanism previously described.

From the foregoing description of certain embodiments of this invention it should be evident to those skilled in the art that various changes and modifications may be made without departing from its spirit or scope.

I claim:

1. A machine of the class described, comprising a rotary milling device, means supporting said device for travel along the surface of a peat deposit in a path transverse to the axis of rotation of said device, means following said device in its direction of travel for severing a layer of the peat from the surface of said deposit, a chute having an open forward face extending laterally and



rearwardly inclined from one end portion of said device toward and beyond the opposite end thereof in position to receive the milled peat, and means for directing a current of air through said chute to discharge the milled peat from its rearward end onto said deposit at one side of the path of travel of said device and to aid in drying such peat.

2. A machine of the class described, comprising a rotary milling device, means supporting said device for travel along the surface of a peat deposit in a path transverse to the axis of rotation of said device, means following said device in its direction of travel for severing a layer of the peat from the surface of said deposit, a chute having an open forward face extending laterally and rearwardly inclined from one end portion of said device toward and beyond the opposite end thereof in position to receive the milled peat, means for directing a current of air through said chute to discharge the milled peat from its rearward end onto said deposit at one side of the path of travel of said device and to aid in drying such peat, and guiding means positioned to receive the milled peat discharged from said chute and direct it into windrows.

3. A machine of the class described, comprising a frame, broad wheels arranged to support said frame for supported progress along the surface of a peat deposit, a rotary shaft carried by said frame transverse to its direction of progress, means for supporting said shaft for vertical adjustment, circular brushes carried by said shaft along its length, circular saws of larger diameter than said brushes carried by and arranged at intervals along said shaft between certain of said brushes, means for rotating said shaft, a downwardly and forwardly extending blade positioned longitudinally and to the rear of said rotary shaft and arranged to dig into the surface of the peat deposit as said frame is drawn forwardly and cut off and lift a layer of said peat into contact with said brushes and saws, the central lengthwise portion of the brushes between adjacent saws being of larger diameter than the remainder, and said blade having forwardly projecting prongs positioned opposite to the brush portions of smaller diameter.

4. A machine of the class described, comprising a frame, broad wheels arranged to support said frame for supported progress along the surface of a peat deposit, a rotary shaft carried by said frame transverse to its direction of progress, means for supporting said shaft for vertical adjustment, circular brushes carried by said shaft along its length, circular saws of larger diameter than said brushes arranged at intervals along said shaft between certain of said brushes, means for rotating said shaft, a downwardly and forwardly extending blade positioned longitudinally and to the rear of said rotary shaft and arranged to dig into the surface of the peat deposit as said frame is drawn forwardly and cut off and lift a layer of said peat into contact with said brushes and saws, and baffles arranged adjacent to said saws and curved upwardly from said blade partly around said brushes and spaced apart to permit escape of the milled peat therebetween.

5. A machine of the class described, comprising a frame, broad wheels arranged to support said frame for supporterd progress along the surface of a peat deposit, a rotary shaft carried by said frame transvese to its diection of progress, means for supporting said shaft for vertical adjustment, circular brushes carried by said shaft along its

length, circular saws of larger diameter than said brushes arranged at intervals along said shaft between certain of said brushes, means for rotating said shaft, a downwardly and forwardly extending blade positioned longitudinally and to the rear of said rotary shaft and arranged to dig into the surface of the peat deposit as said frame is drawn forwardly and cut off and lift a layer of said peat into contact with said brushes and saws, baffles arranged adjacent to said saws and curved upwardly from said blade partly around said brushes and spaced apart to permit escape of the milled peat therebetween, and a chute open along its forward face and positioned back of said brushes and saws in position to receive the milled peat escaping between said baffles.

6. A rotary peat treating device comprising a shaft, means supporting said shaft for rotation, circular brushes carried by said shaft along its



length, and circular saws of larger diameter than said brushes arranged at intervals along and fixed to said shaft between certain of said brushes, the central lengthwise portions of said brushes between adjacent saws being of larger diameter than the remainder of said brushes.

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