Aug. 26, 1924. 1,506,036

C. A. WILLMARTH

PEAT MACHINE

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Fig. 1.

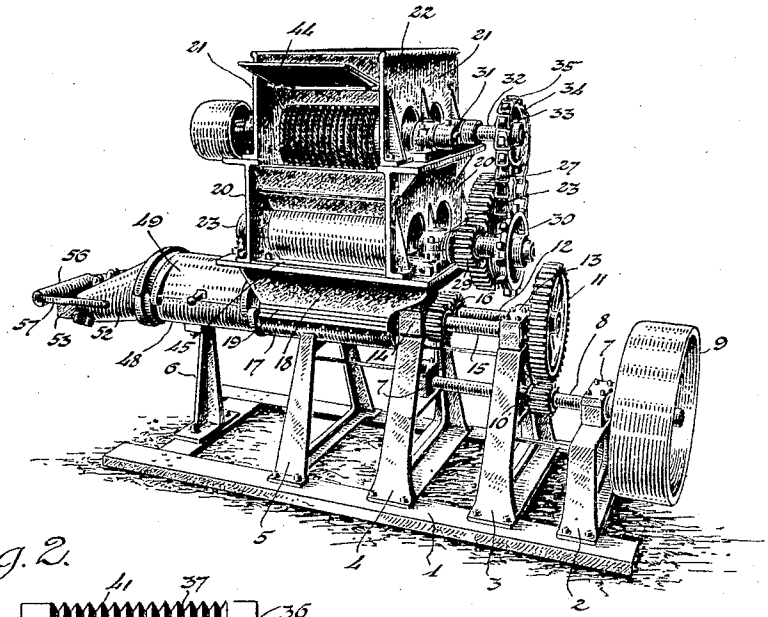
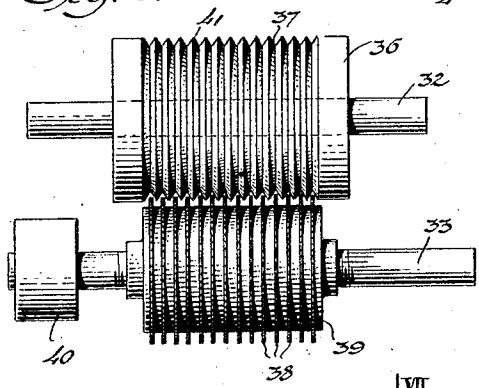


Fig. 2.



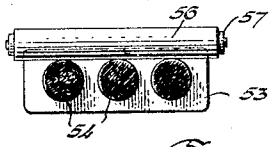


Fig. 4.

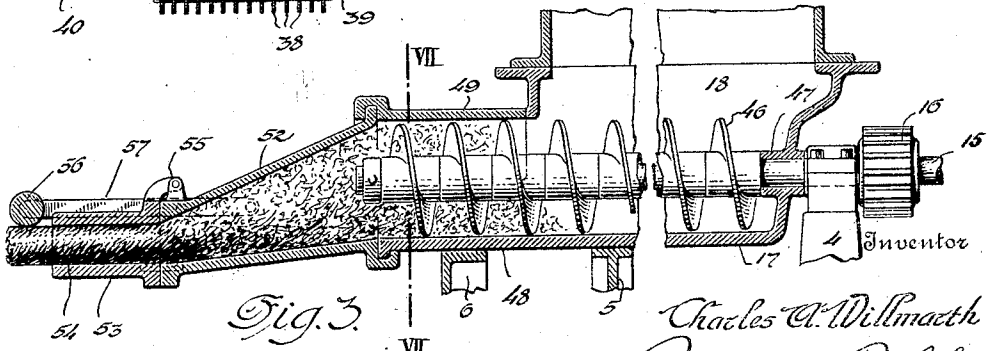


Fig. 3.

Inventor

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By

Attorneys

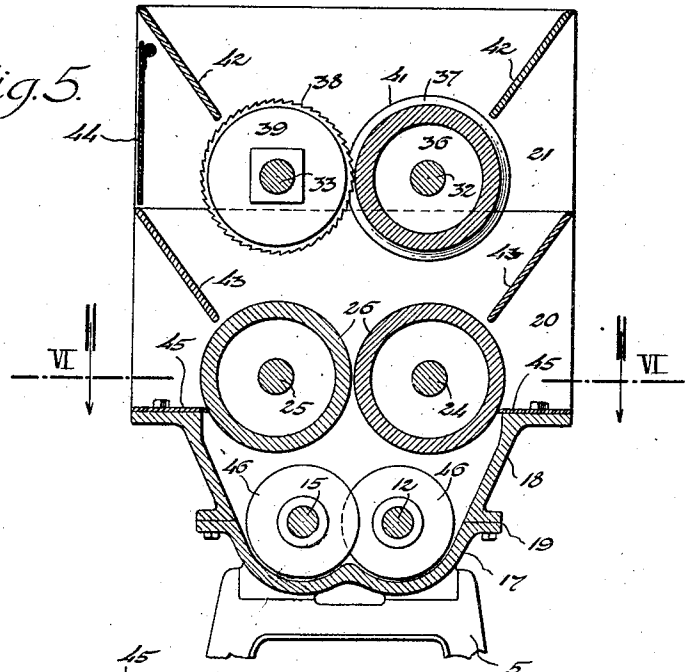
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Fig. 5.



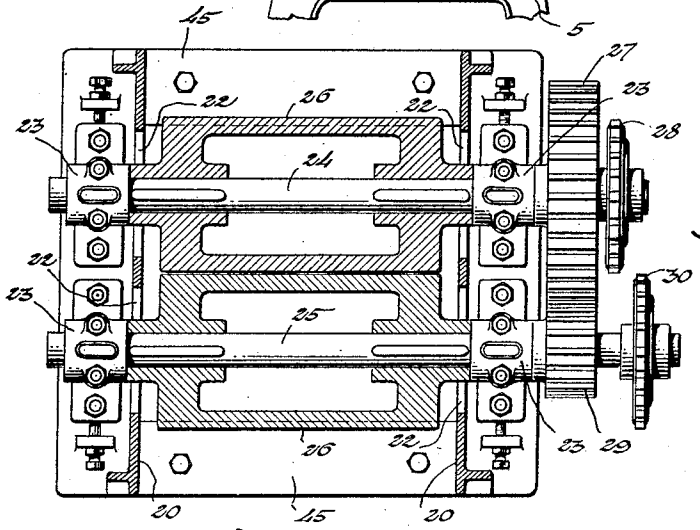


Fig. 6.

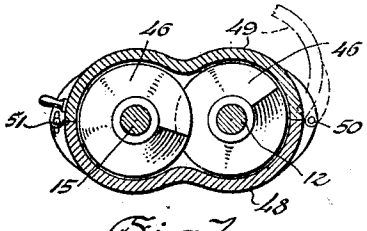


Fig. 7.

Inventor:

Charles A. Willmarth

By Barthel & Barthel Attorneys

Patented Aug. 26, 1924. 1,506,036

UNITED STATES PATENT OFFICE.

CHARLES A. WILLMARTH, OF TECUMSEH, MICHIGAN.

PEAT MACHINE.

Application filed September 28, 1923. Serial No. 665,340.

To all whom it may concern:

Be it known that I, CHARLES A. WILLMARTH, a citizen of the United States of America, residing at Tecumseh, in the county of Lenawee and State of Michigan, have invented certain new and useful Improvements in Peat Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to a peat machine and is adapted to be used in the manufacture of fuel made from peat or a composition matter in which peat predominates for fuel purposes. Various grades of peat may be obtained for fuel purposes and all grades of peat contain decayed vegetable matter which in some grades of peat requires cutting or disintegrating in order that the peat may be easily molded into briquets or other forms that may be readily handled as fuel. Some grades of peat, for instance, humus, simply requires disintegration in order to be molded into briquets, so I have devised a machine by which various grades of peat may be cut, crushed or otherwise disintegrated and placed in such condition that it may be economically and expeditiously molded into briquets.

My machine includes novel sawing or severing instrumentalities which cooperate in positively dividing any stringy or fibrous vegetable matter contained in peat. One of these instrumentalities has a sawing action relative to the other instrumentality and in consequence of such action fibrous peat may be reduced for a granular, fluffy condition, as fine as saw dust, so as to be conformable to various shapes by having pressure applied thereto.

My machine, in addition to the cutting instrumentalities includes crushing instrumentalities in the form of cooperating rolls adapted to crush humus or water cells and any indurate mineral or fibrous matter which may have escaped disintegration by the sawing instrumentalities.

My machine also includes molds into which peat is fed under sufficient pressure to compress the peat and impart shapes thereto that will permit of the peat being eventually easily handled, for instance in briquet form.

My invention further aims to provide a machine for accomplishing the above results wherein the parts are constructed with a view of reducing the cost of manufacture, easy of assembling, accessibility to the molds and other instrumentalities of the machine, and compactness so that the machine will occupy a comparatively small space in the fuel producing plant.

Reference will now be had to the drawings, wherein—

Figure 1 is a perspective view of the machine;

Fig. 2 is an enlarged plan of the cutting or shredding instrumentalities;

Fig. 3 is an enlarged longitudinal sectional view of a portion of the machine;

Fig. 4 is an end view of a mold;

Fig. 5 is a vertical sectional view of a greater part of the machine;

Fig. 6 is a horizontal sectional view taken on the line VI—VI of Fig. 5, and

Fig. 7 is a cross sectional view taken on the line VII—VII of Fig. 3.

In the drawings, the reference numeral 1 denotes a bed or foundation on which are mounted A frames 2, 3, 4 and 5, also an upright 6. The A frames 2 and 4 are provided with bearings 7 for a driven shaft 8 provided with a pulley or belt wheel 9 so that said shaft may be driven from an engine or motor. On the driven shaft 8 is a small gear wheel 10 meshing with a large gear wheel 11 mounted on a screw shaft 12 journaled in bearings 13 and 14 carried by the A frames 3 and 4. The same bearings support another screw shaft 15 and both shafts have meshing gear wheels 16 whereby said shafts may be driven in synchronism but in opposite directions.

The A frames 5 support the detachable bottom 17 of a hopper 18, said bottom being attached to the hopper by suitably connected flanges 19. The hopper and its bottom are substantially oblong and mounted transversely of the hopper are superposed end walls 20 and 21 suitably connected together and provided with openings 22. On the ends of the hopper, adjacent the walls 20 are bearings 23 for shafts 24 and 25. On these shafts are mounted crushing rolls 26 adapted to cooperate in crushing peat after having been disintegrated in the upper part of the machine, as will hereinafter appear.

On one end of the shaft 24 is a large gear wheel 27 and a small sprocket wheel 28, said large gear wheel meshing with a small gear wheel 29 mounted on the shaft

25, which is also provided with a sprocket wheel 30 or other power transmission member to permit of said shaft being driven by a sprocket chain or other power transmission member from a suitable source of power (not shown).

Mounted on the end walls 20 are bearings 31 for shafts 32 and 33, the former having a sprocket wheel 34 over which is trained a sprocket chain 35 driven from the sprocket wheel 28, and in consequence of this arrangement the power applied to the sprocket wheel 30 drives three shafts 24, 25 and 26.

On the shaft 32 is a roll 36 provided with a series of circumferential grooves 37 which are preferably V-shaped in cross section and extending into said grooves are the peripheral saw tooth cutting members 38 of a roll 39 mounted on the shaft 33, said shaft having a pulley or power transmission wheel 40 at one end thereof so that it may be driven independent of the shaft 32 and preferably at a greater speed. The relation of the rolls 36 and 39 is such as to provide a narrow pass between the rolls for peat which must encounter the cutting members 38 of the roll 39 and the annular break-down edges 41 of the roll 36, the edges 41 breaking the peat between the cutting members 38 and said members cutting the peat in the grooves 37 between the edges 41. These rolls alone will break down and disintegrate peat fed into the pass between said rolls, and to so guide peat the end walls 21 are connected by inwardly converging side walls or deflectors 42 which may maintain a quantity of peat on top of the rolls 36 and 39 to pass therebetween. After passing between these rolls the peat encounters the rolls 26 and a quantity of peat may be held on said rolls by inwardly converging walls or deflectors 43 connecting the end walls 20. In order that access may be had to any peat between the upper and lower sets of rolls the end walls 21 support a pivoted door or gate 44 which may be swung upwardly, as shown in Fig. 1, this door or gate also exposing the roll 39 so that it may be cleaned or inspected without cessation in the operation of the machine.

The rolls 26 are adapted to crush and grind the disintegrated or sawed peat and to prevent peat from adhering to the rolls or packing on the periphery of the rolls the hopper 18 is provided with scrapers 45 in proximity to said rolls.

After the peat leaves the rolls 26 it is deposited on or between spiral screws or feeding members 46 disposed in overlapping relation, as best shown in Figs. 5 and 7, said screws being mounted on the shafts 12 and 15 which are also journaled in bearings 47 carried by the hopper 18. The shafts and screws extend out of the hopper into a two-part extension 48, one part of which is in the form of a hinged lid 49 hinged to the stationary part of the extension, as at 50, and held in a closed position by a suitable catch or other device 51. The extension 48, as well as the bottom 17 of the hopper 18 has a cross sectional shape conformable to the screws 46 to facilitate the feeding of disintegrated peat into the extension in which the screws terminate. See Fig. 3.

At the outer end of the hopper extension 48 is a tapered outlet member 52, preferably detachably connected to the hopper extension, and into this outlet member is fed peat from the cylinder 18. At the outer end of the outlet member 52 is a molding member 53 having a plurality of openings 54 through which peat is forced and a cylindrical shape imparted thereto. The molding member 53 is preferably attached to the outlet member 52 by a hinge 55 so that it may be swung upwardly out of the road when it is desired to obtain peat in a greater bulk, and as the peat is ejected from the molding member 53 small quantities are adapted to be broken off by a roll 56 in a yoke 57 pivotally attached to the sides of the outlet member 52.

As a matter of good construction, I prefer to make the cutting members 38 in the form of disks with spacing washers therebetween and said disks and washers all assembled on the shaft 33 and clamped together by nuts or other clamping means.

From the foregoing it will be observed that I have devised a compact and durable machine embodying a lower hopper, an intermediate hopper and an upper hopper with rolls in said hoppers disposed so that various kinds of peat may be deposited in the upper hopper to be disintegrated by the rolls in the upper hopper, discharged into the pass between the rolls of the intermediate hopper, and eventually discharged on to the feed screws to be fed into the outlet member and moulded into small quantities, for instance cylindrical briquets, which may be dried, cured or otherwise treated so as to be conveniently handled as fuel.

While in the drawings there is illustrated a preferred embodiment of my invention, it is to be understood that the structural elements are susceptible to such changes as are permissible by the appended claims.

What I claim is:—

1. In a peat machine, a set of driven crushing rolls, a set of disintegrating rolls above said crushing rolls and discharging into the pass of said crushing rolls, a hopper below said crushing rolls, feed screws in said hopper, and a moulding member at an end of said hopper adapted to receive peat therefrom.

2. A peat machine as called for in claim 1, wherein said set of disintegrating rolls

includes a roll having grooves, and a roll having peripheral cutting members extending into the grooves of the first mentioned roll.

3. A peat machine as called for in claim 1, wherein said feed screws are disposed in parallel overlapping relation and operated independent of said rolls.

4. In a peat machine, a set of rolls, one of said rolls having grooves, peripheral cutting members on the other roll extending into the grooves of the first mentioned roll, and peat molding means adapted to receive peat from said rolls.

5. A peat machine comprising a hopper having an outlet, feed screws in said hopper, peat molding means at the hopper outlet into which peat is fed by said feed screws, superposed end walls on said hopper, inclined side walls connecting said end walls, superposed sets of rolls between said end walls, and means for driving some of said rolls at variable speeds.

6. A peat machine comprising a bottom hopper, an intermediate hopper and an upper hopper, rolls in said intermediate and upper hopper, feed screws in said bottom hopper, an outlet member for said bottom hopper, and a moulding member carried by said outlet member.

7. In a peat machine, upper and lower hoppers, peat sawing means in the upper hopper, peat crushing means in the lower hopper adapted to crush sawed peat, and peat moulding means adapted to receive peat from the lower hopper.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES A. WILLMARTH.

Witnesses:

ANNA M. DORR,

KARL H. BUTLER.