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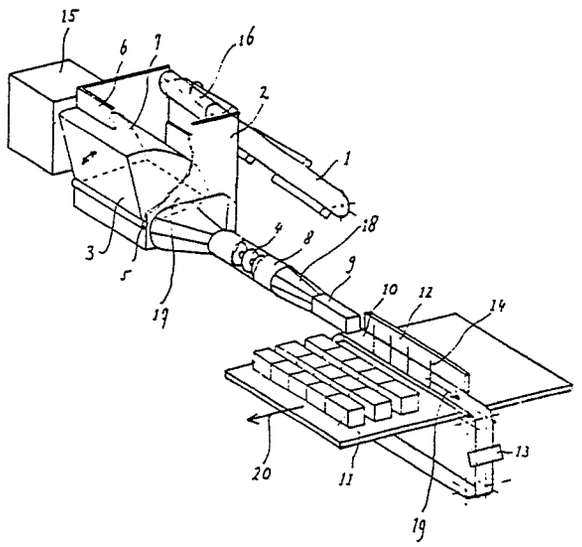
(54) Method for making turf from bog-peat and apparatus for carrying out the method.

(57) The invention relates to a method of making turf from bog-peat in which the bog-peat is compacted by first introducing it into a space (2) where it is compacted and thereafter pressed through a tapering tubular space (8) toward an outlet (9) therefrom and depositing it on a plateau (10) where it is cut into blocks of the required dimensions. The invention also comprises apparatus for carrying out the method and which is provided with a space (2) in which, with the aid of a pivotable flap (17), the bog-peat is separated and compacted, and thereafter pressed in a tubular space (8) and a transporting-compressing mechanism. The apparatus is preferably provided with a transport-belt (10), functioning as a receiving plateau with which cutting members (14) can cooperate.



EP 0 291 124 A1

METHOD FOR MAKING TURF FROM BOG-PEAT AND APPARATUS FOR CARRYING OUT THE METHOD

The invention relates to a method of making turf from bog-peat in which the peat is removed from water and taken on to land whereafter it is dewatered, compacted and brought into the required form.

Such a method is generally known in which before the landed peat can be stoked it must be divested of a considerable amount of the moisture amounting to approximately 60 to 90%. In order to achive this, the peat must be left lying on the land for a long time, generally about 5 months during which time the moisture is lost through evaporation and return to the soil. Moisture loss is further promoted during compacting of the peat, this is achieved by subjecting it to pressure by the so-called process of "Turf-treading".

The turves are only suitable for stoking when the peat is sufficiently dry. The two great disadvantages of this known method are that the turf making process takes too long and that it is work intensive.

The object of the invention is to provide a method and apparatus therefor which is devoid of these disadvantages.

The method according to the invention is characterised in that the peat brought onto land is compacted in a first space and thereafter separating it under a certain pressure in a part of the space and feeding and pressing it therefrom through a mainly tubular all-round enclosed second space tapering toward an open outlet thereof and from which it is deposited onto a plateau in staff form and then cut into blocks of the required length.

With the aid of this method, the peat can be compacted and formed into turfs in a very short time after being brought onto land and thus before dewatering is achieved to the degree according to the known process. With the present method it is essential that the peat is continuously transported to and compacted in the second space from a (part) space in which a certain pressure is exercised and in such a manner as to ensure continuous transport therethrough and to prevent "Tunnels" forming in the peat in the first space after transport of a certain quantity thereto and through which a following quantity transported to this first space lays dormant. The outlet from the second space is an extrusion-nozzle of rectangular or square cross-section and which preferably tapers toward the discharge-point thereof to produce compacted peat in a staff form. The staves are then pushed onto a plateau, cut into turves and finally dried.

One of the problems arising here is that due to the great adhesion of the wet peat to the plateau and because of little ability to retain its shape, difficulties arise in pushing the staves onto the plateau without them losing their shape. In order to provide a solution to this problem, a preferred embodiment of the method according to the invention is characterised in that after leaving the outlet, the compacted peat is deposited on a transport-belt which runs in a particular direction and at a speed adapted to that at which the staves of peat leave the outlet and such that a certain length thereof is pushed from the transport-belt in its entirety onto a plateau which moves approximately perpendicularly to the transport-belt and cuts the staff into blocks of the required length.

The staves then need no longer to be pushed onto the plateau but will be deposited on the transport-belt which moves as it were synchronously with the staff extruded from the nozzle.

When the amount of staff extruded onto the plateau has a certain length, itis pushed sideways onto a second plateau and then fed by that plateau onto the transport-belt approximately perpendicular thereto. The staff is then cut into pieces of a required length corresponding to that of the the turves on the second plateau or directly during the process during which the staff is being fed onto the belt. A continuous turving process can be effected in this manner.

The invention also includes an apparatus for carrying out the method . Such an apparatus is characterised in that it comprises a first boxlike space with a supply opening in the upper part and a discharge opening in the bottom part thereof which is is connected to the inlet of a mainly tubular all-round enclosed second space provided with a taper before the outlet thereof and in which in the lower part and in at least part of the second space a transporting/compressing mechanism runs to a receiving plateau located after the outlet, in which the lower part can be closed off from the upper part with the aid of a flap in a sidewall which is pivotable about the axis of of a shaft from above to below and which flap is formed by a sidewall surface of a member running parallel to the cylindrical shaft and pivotable in and out of the first space and which has the form of a segment of a cylinder with aperpendicular cross-section subtending a quarter of a circle approximately and which is pivotable about the axis of the cylindrical shaft in the sidewall and which is approximately parallel to the direction in which transport runs and in which on pivoting the mantle of the cylindrical part moves below the upper edge of the opening with little play therebetween.

When the peat is is fed into the first space the

flap is open, that is to say that the pivotable member is pivoted to a position in which it is out of the space and the peat falls into the lower part of the space. When a certain amount of peat has been fed into the first space the flap closes thereover it and presses it against peat lying thereunder somewhat. This peat is then transported from this closed part of the space to and compacted in the second space. Meanwhile peat continues to be fed into the supply opening whereafter it falls onto the round surface of the pivotable member. After transport has lasted for a certain time, the flap opens again and in doing so the round surface of the pivotable member moves down under the upper edge of the opening in the sidewall and scrapes off the peat adhering to the surface thereof which then falls into the lower part of the first space. When this space is again filled with the required amount of peat, the flap again closes and the process repeats itself. Tunnel-forming in the peat is prevented when it is carried away by the pressure exerted thereon by the closed flap.

In order to ensure a continuous process, the pivoting frequency of the pivotable member, the feeding speed of the peat into the box and the transport to the second space must be attuned to one another.

A helical-screw feed is preferably used as the transporting means.

In order to prevent the earlier quoted difficulty caused by pushing the so produced peat staves onto the first plateau, a preferred embodiment of the apparatus according to the invention is so constructed that the receiving plateau is in the form of a transport-belt which runs the length of the outlet and the speed of which is adapted to the speed of transport through the parallel lying second plateau which is movable in a particular direction and which lies mainly perpendicular to and runs a short distance under the transport-belt and in which means are provided to push the product fed onto the transport-belt thereoff onto the plateau.

The staves so produced are thus taken onto the transport-belt and carried with it without the need to be pushed thereon. When a certain staff length is produced, the length is pushed off the transport-belt onto the second plateau. To this end and in a preferred embodiment, the apparatus is provided with a straight beamlike member which extends in the direction of movement of the transport-belt above the second plateau and with a length which is at the most equal to that of the width of the second plateau and which moves backward and forwards with little play over the whole length of the transport-belt thereabove with a speed which is high in relation to that of the transport-belt.

The speed of forward and backward movement of the beam must be high in order that the production need not be interrupted during the time that the beam is pushed away.

The staves thus pushed consecutively onto the second plateau to the required place thereon can now be cut to provide turves. It is also possible to cut all the staves simultaneously when they have been pushed onto the second plateau. To this end the apparatus according to the invention is provided alongside the transport-belt on the side thereof in the direction of movement of the second plateau with a cutting member fixed in a vertical position with respect to the surface thereof.

The invention is now further to be described with reference to the acompanying drawing which shows schematically an exemplary embodiment of the apparatus.

The peat is carried by a transport-belt (1) to the storage-box via a supply opening (15) to the first space (2). A pivotable member (3) is provided in a sidewall of this space (2) to pivot about the axis of a shaft (5). The underside of the pivotable member (3), indicated by the dotted line, functions as a flap to close the underside of the space (2). When the flap is open,thus when the pivotable body is pivoted outside the confines of the space (2), the peat fed thereinto falls onto the bottom of the storage-box and fills the bottom. When a certain amount of peat has been discharged into the box, the pivotable member (3) is pivoted inward so that the undersurface thereof (17) presses on the peat lying on the bottom of the lower part of the the space and closes off that lower part from the space thereabove. The following peat fed into the box falls on the round surface (7) of the pivotable member.

In the meantime, the peat in the lower part is compressed and transported by the helical screw-feed (4) to the tubular member (8). This member (8) has an approximately conically-tapering form (18) in which the peat is compacted and after which it is conducted via the extrusion-nozzle (9) to the transport-belt at a speed corresponding to that of the peat during its extrusion in a stafflike form from the nozzle (19) and in the direction indicated by the arrow (20). A discharger-beam (12) move backward and forward at a relatively high speed across the width of the transport-belt (10) and by which means a staff of peat present on the transport-belt (10) can bepushed thereoff sideways. The staff then falls onto the second plateau (11) which moves in the direction indicated by the arrow (20) and by which means the staves of peat are carried away. The cutting of the staves into turves of the required length is achieved with the aid of a cutter (14) which cuts the staves during he time they are pushed off the transport-belt (10). These cutting members can be of wire for example.

In order to clean the transport-belt (10) after the staves of turf have been pushed off therefrom, a scraper (13) is provided in the apparatus as shown.

Whilst in the manner described herefor peat can be fed from the lower part of the first space (2) and processed into turves, the peat transported by the transport-belt (10) falls repeatedly into the upper part of the space (2). When sufficient peat has been fed from the the lower part, the flap (17) again opens by the pivoting member (3) so that it pivots outward. The rounded surface (7) pivots with it at a low speed under the above lying part (6) of the sidewall and in doing s the peat adhering to the surface (7) is scraped off therefrom and falls into the lower part of the space.

An energy source (15) is provided for driving the helical screw-feed and also the pivoting member, the transport-belt and the second plateau.

Claims

1. A method of making turf from bog-peat in which the peat is removed from the water and taken onto land whereafter it is dewatered, compacted and brought into the required form, characterised in that the peat so landed is compacted in a first space (2) and thereafter separated under a certain pressure in a part of the said space and is fed and pressed therefrom through a mainly tubular and all-round enclosed second space (8) tapering toward the open outlet (9) thereof and from which it is pushed onto a plateau in stafflike form and cut into blocks of the required length.

2. A method as claimed in claim 1 characterised in that after leaving the outlet (9) the compacted peat is deposited on a transport-belt (10) which runs in a particular direction (19) at a speed adapted to that at which the peat of stafflike form leaves the outlet (9) and such that a certain length thereof is pushed from the transport-belt (10) in its entirety onto a plateau (11) which moves approximately perpendicularly to the transport-belt (10) and cuts the staff into blocks of the required length.

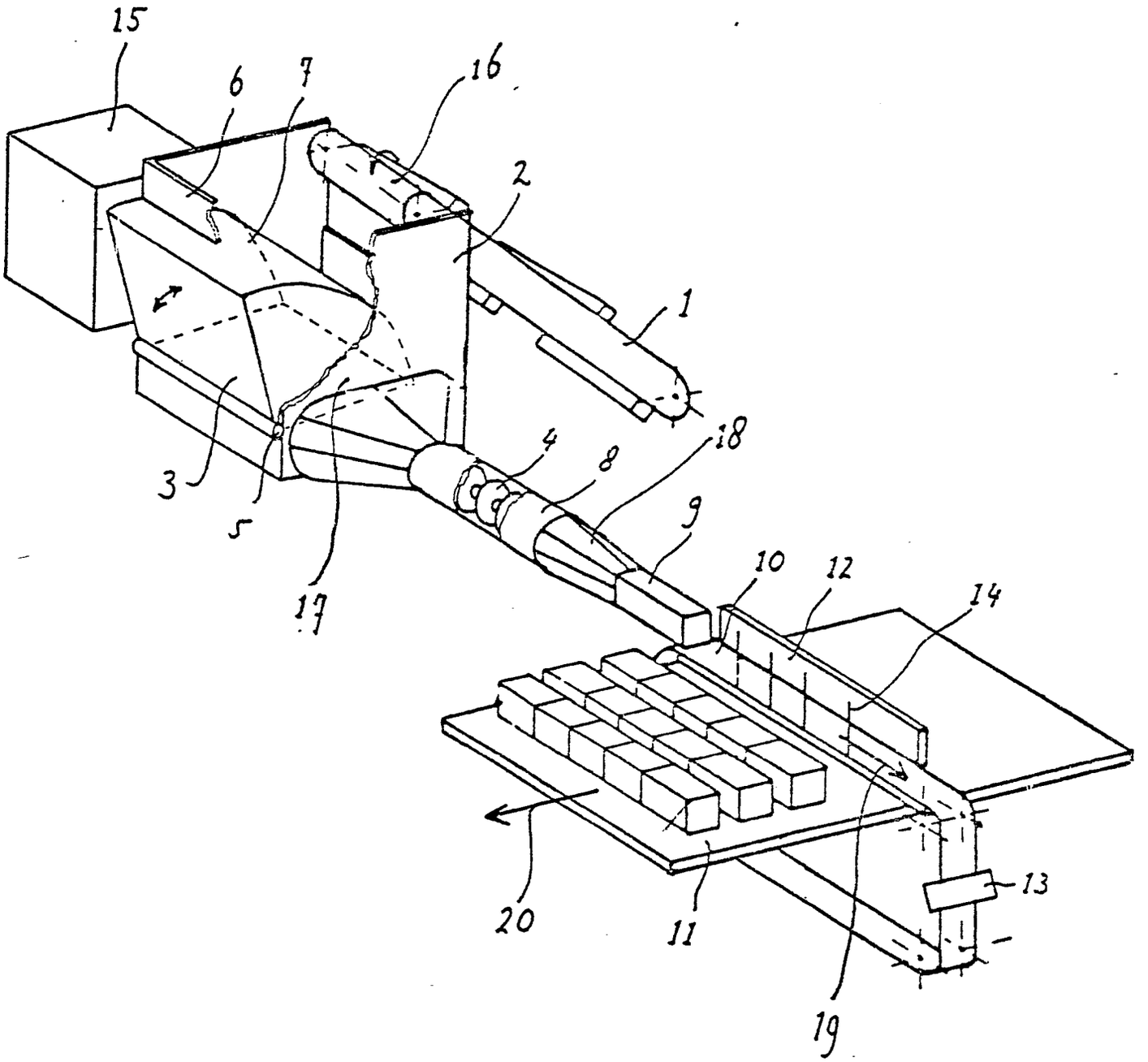
3. Apparatus for carrying out the method as claimed in claim 1 characterised in that it comprises a first boxlike space (2) with a supply opening (16) in the upper part thereof and a discharge opening in the lower part thereof which is connected to the inlet of a mainly tubular and all round enclosed second space (8) which tapers toward its outlet (9) and in which in the said lower part and in at least a part of the second space (8) a transporting/compacting mechanism runs to a receiving plateau located past the outlet (9), in which the lower part can be closed off from the upper part with the aid of a flap (17) in a sidewall which is pivotable about the axis of a shaft (5) from above to below and which flap is formed by a sidewall surface of a member (3) running parallel to the cylindrical shaft (5) and pivotable in and out of the first space (2) and having the form of a segment of a cylinder subtending a quarter of a circle approximately and with a cross-section perpendicular thereto and which member (3) is pivotable about the cylindrical shaft (5) which lies in the said sidewall and which is approximately parallel to the direction of transport and in which on pivoting the mantle (7) of the cylindrical part moves below the upper edge (6) of the opening with little play therebetween.

4. Apparatus as claimed in claim 3 characterised in that the transporting/compacting mechanism is helical feed-screw (4).

5. Apparatus as claimed in claim 3 or claim 4 characterised in that the receiving plateau is a transport-belt (10) which runs past the extended outlet opening (9) and the speed of which is adapted to the speed of transport through the second space (8) and which co-operates with a mainly parallel lying second plateau (11) movable in a particular direction (20) and which lies mainly perpendicular to and runs a short distance under the transport-belt (10) and in which means is provided to push the product fed onto the transport-belt thereoff onto the plateau (11).

6. Apparatus as claimed in claim 5 characterised in that the said means comprises a straight beamlike-member (12) which extends in the direction of movement (19) of the transport-belt (10) above the second plateau and with a length which is at the most equal to that of the width of the second plateau and which moves backward and forward with little play over the whole length of the transport-belt (10) thereabove and with a speed which is high in relation to that of the transport-belt (10).

7. Apparatus as claimed in claim 7 characterised in that alongside of the transport-belt (10) on the side thereof in the direction-of-movement of the second plateau (11) a cutting member (14) is fixed in a vertical position with respect to the surface thereof.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EUROPEAN SEARCH REPORT

Application Number

EP 88 20 0887

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
Y	DE-C- 149 571 (HANSEN) * Whole document *	1-7	B 30 B 11/22 C 10 F 7/08
Y	GB-A- 606 397 (BERENDS) * Whole document *	1-4	
Y	US-A-3 602 963 (LINGL) * Column 3, lines 21-62; figure 1 *	1-3,5-7	
Y	EP-A-0 080 719 (PERSÖNER VERKSTAD) * Page 2, line 31 - page 3, line 21; figure 2 *	3	

TECHNICAL FIELDS SEARCHED (Int. Cl.4)

B 30 B
C 10 F
E 21 C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	12-08-1988	BOLLEN J.A.G.

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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