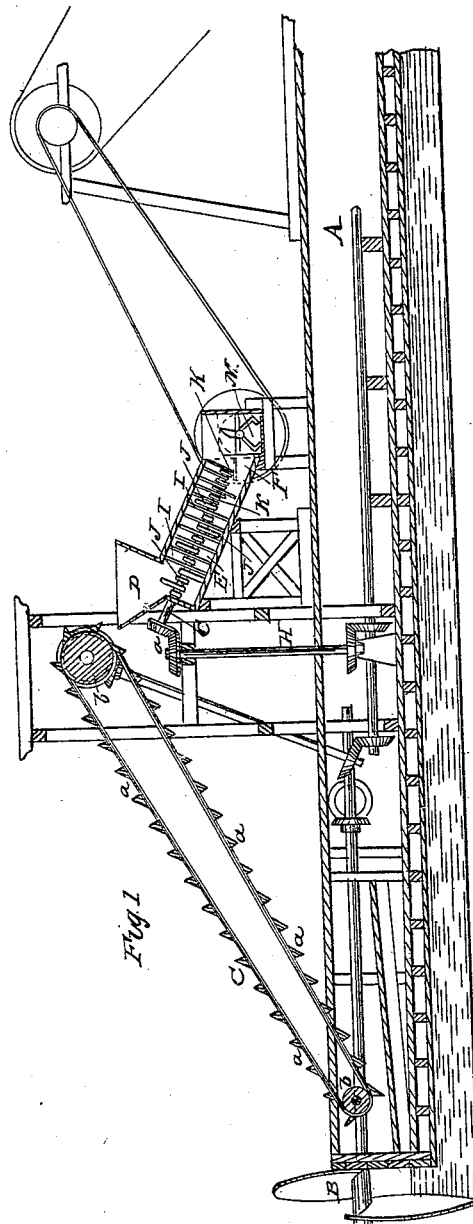


J. HODGES.
Peat Machine.

No. 53,935.

Patented April 10, 1866.



Witnesses
Wm E Laym
J W Blomington

Inventor
James Hodges
Mum & Co
atty

J. HODGES.
Peat Machine.

3 Sheets—Sheet 2.

No. 53,935.

Patented April 10, 1866.

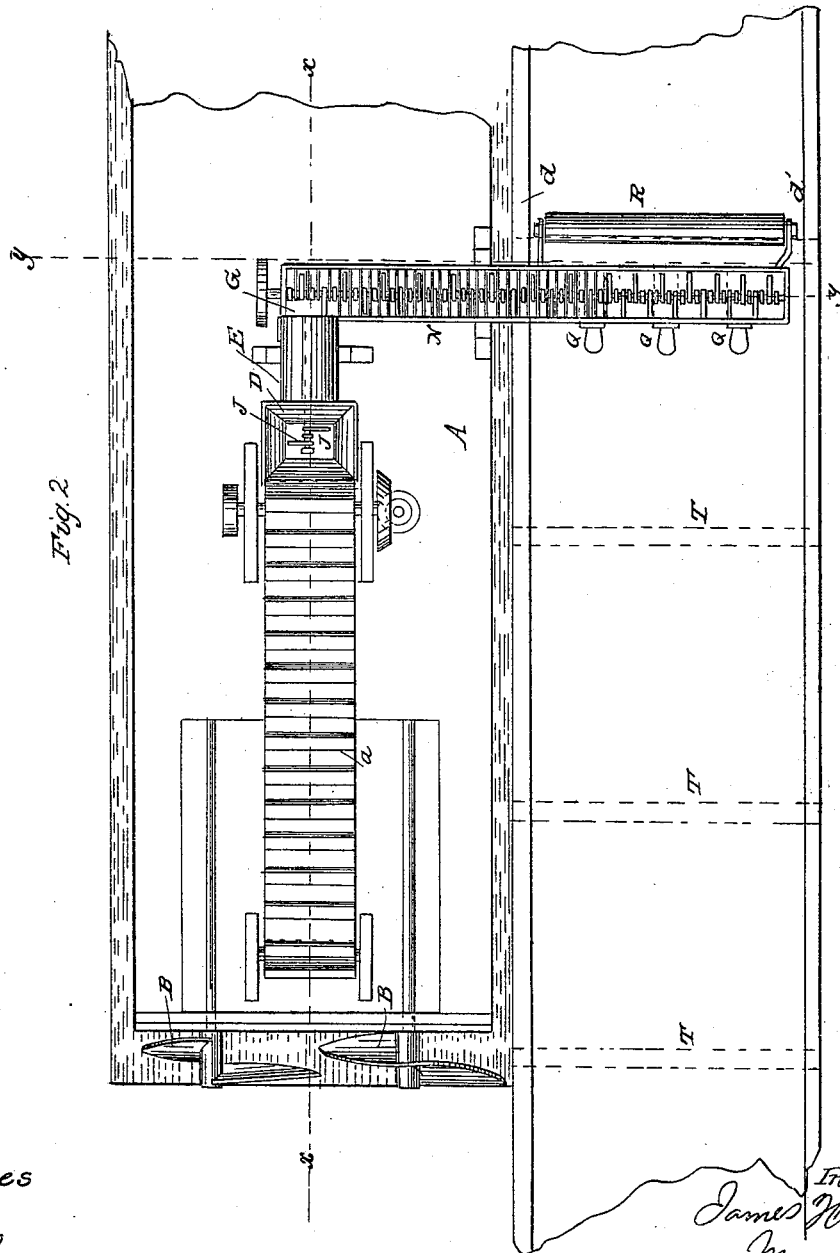


Fig. 2

Witnesses
Wm. E. Lyman
J. W. Houghton

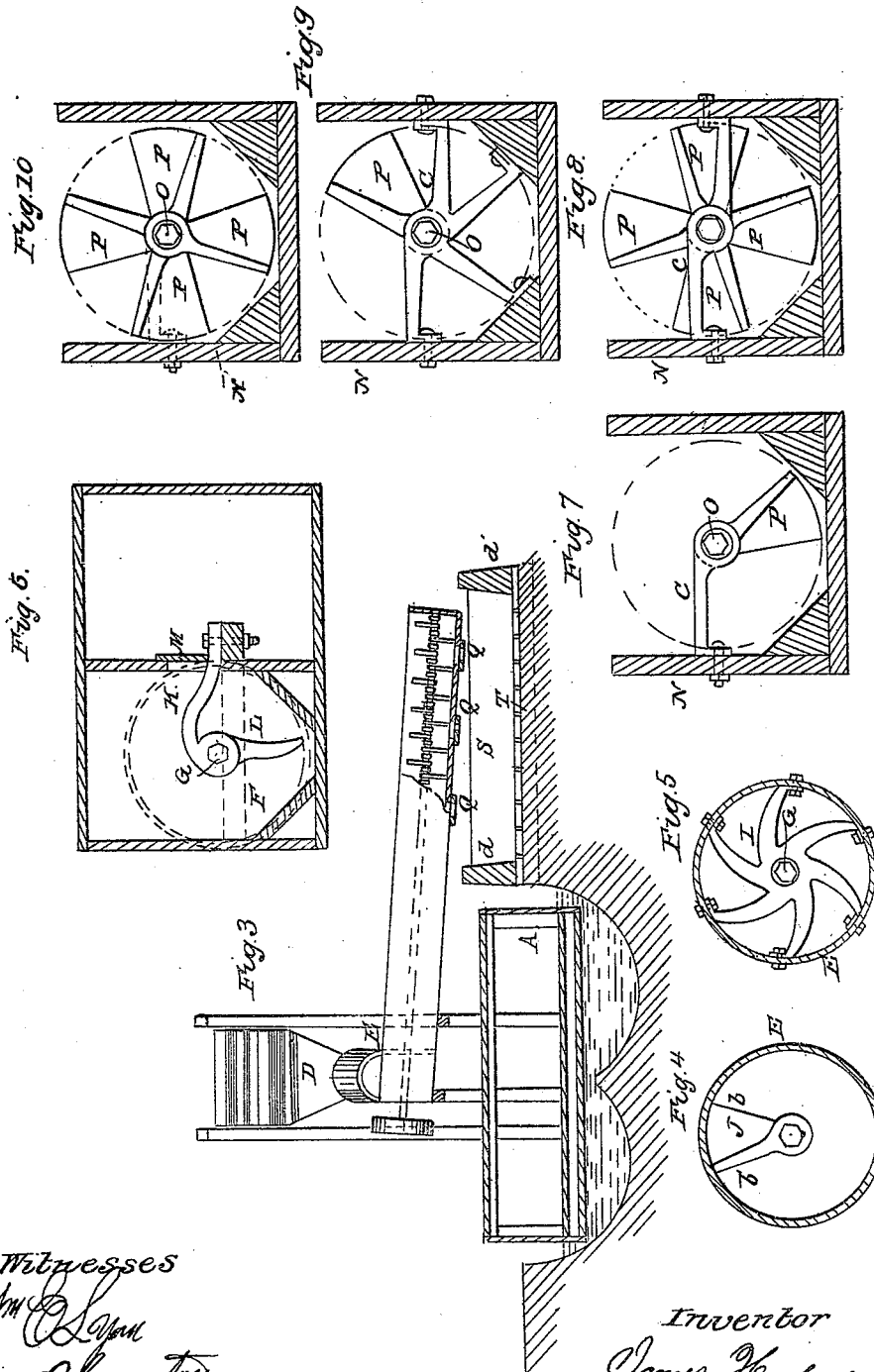
Inventor
James Hodges
Mum & Co
Attys

J. HODGES.
Peat Machine.

3 Sheets—Sheet 3.

No. 53,935.

Patented April 10, 1866.



Witnesses
J. M. C. L. M.
J. B. Blount

Inventor
James Hodges
Mum & Co
Attorneys

UNITED STATES PATENT OFFICE.

JAMES HODGES, OF PENNY HILL, BAGSHOT, ENGLAND.

IMPROVED PEAT-MACHINE.

Specification forming part of Letters Patent No. 53,935, dated April 10, 1866.

To all whom it may concern:

Be it known that I, JAMES HODGES, of Penny Hill, Bagshot, in the county of Surrey, in that part of the United Kingdom of Great Britain and Ireland called England, have invented a new and Improved Machine for Pulping and Manufacturing Peat-Fuel; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1, Sheet No. 1, is a side sectional view of my invention, taken in the line *x x*, Fig. 2; Fig. 2, Sheet No. 2, a plan or top view of the same; Fig. 3, a transverse vertical section of the same, taken in the line *y y*, Fig. 2; and Figs. 4, 5, 6, 7, 8, 9 and 10, detached views of parts pertaining to the same.

Similar letters of reference indicate corresponding parts.

This invention relates to a new and improved machine for pulping and manufacturing peat for fuel direct from the locality where the peat is excavated.

A represents the hull of a vessel, which may be constructed in substantially the same manner as set forth in my previous patent, and B B are screw-excavators applied to the vessel, also as previously described in said patent.

C is an elevator, made of any suitable material or form; but, by preference, I use an endless revolving elevator of about, say, four feet in width or face, composed of chains or any suitable flexible material or substance having wooden battens *a* attached, or suitable buckets. This elevator works over rollers *b b*, and it may be supported by intermediate rollers, if necessary or desired, and it receives the excavated peat from the excavators and delivers it into a hopper, D. This hopper D may be made of iron or wood—say about four feet square on top and has its bottom terminating in the upper end of an inclined trough, E. This inclined trough, internally, is of cylindrical form, about seven feet in length and two feet three inches in diameter, terminating in what I term a "separator," F, which may be about three feet long and two feet three inches wide.

G is a shaft which is placed longitudinally in the trough E and driven by bevel-gears *a'* from an upright shaft, H, which passes through the deck of the vessel and receives its motion from

shafting below connected with the excavator-driving mechanism, as shown in red in Fig. 1. This shaft G is of iron and may be about four inches in diameter, and it is continued through the separator F.

I represents spider-diaphragms, the shape or form of which is shown clearly in Fig. 5. These diaphragms are securely bolted within the trough E, the shaft G turning freely in them, and said diaphragms separate revolving vanes J, which are firmly keyed to and revolve with the shaft G. The shape or form of these vanes is shown clearly in Fig. 4. Any proper number of them may be used; but for a length of seven feet about twelve will probably be sufficient.

It is not designed to have diaphragms I immediately below the hopper D, but vanes only, so that the free passage of the peat into trough E will not be obstructed. The form of the vanes J is such that while one edge, *b*, cuts the fiber of the peat between itself and one side of the diaphragm, precisely in the manner of shears, the other edge, *b'*, of the vane, crushes the fiber between itself and the flat side of the next diaphragm against which it is forced by the spiral action of the revolving vane, as said vanes have a spiral position on shaft G, and may be considered as a section of a screw-thread.

In the separator F, which is a continuation of trough E, there are placed a series of fixed curved bars, K, (see more particularly Fig. 6,) through which, at one end, the shaft G passes loosely, the opposite ends being attached to the side of the separator-case. These bars are arranged at suitable intervals apart, in order to admit of the introduction of revolving curved bars L between them. These bars L are firmly keyed to and revolve with the shaft G, and from their peculiar curve, as shown in Fig. 6, acting in connection with the curved surface of the stationary bars K, are, in the course of their revolution, always at right angles with the tangent of the curve of the stationary bars, thereby forcing any solid matter or foreign substances which they may disengage from the partially-pulped peat along the upper side of the stationary bars and out through a door, M, in the side of the separator F, into any proper receptacle prepared to receive them, from which receptacle the collection may at any time be removed.

N is a trough for the pulping and distribut-

ing machine, which may be constructed of wood or any suitable material, and of any proper form in its transverse section. (See Figs. 7, 8, 9, and 10. This trough N leads from the end of the separator F, at right angles and on a slight incline over the side of the vessel A. to the pulp-beds, and may be about forty feet in length and one foot nine inches square in its transverse section, properly braced and trussed from the vessel A, so as to sustain its own weight, together with the weight of the peat being pulped and conveyed. This trough and its contents may be counter-balanced by a weight placed at the opposite side of the vessel, in order to preserve the horizontal position of the latter. In this trough N there is placed longitudinally a shaft, O, extending its entire length and supported by bearings at suitable intervals apart, and in the trough the first twenty-four feet of its length from the feed end there are secured skeleton-diaphragms *c*, in three sections of eight feet each. The first section from the feed end will contain diaphragms of one arm each, (see Fig. 7,) the second section diaphragms of two arms, *c*, (see Fig. 8,) while in the other section the diaphragms will have four arms, *c*, (see Fig. 9.) From the outer end of this last section to the end of the trough N there are no diaphragms, but the shaft O has vanes P attached to it extending its whole length. These vanes may be constructed in the same manner as those previously described on shaft G, and they work between the diaphragms in the upper or feed end of trough N. The shaft O revolves loosely through the diaphragms in trough N, and at the bottom of said trough there are apertures provided with suitable slides or valves, Q, to admit the pulped material to pass out upon the pulp-beds S.

R is a roller attached to the trough N and extending over the pulp-beds S. The object of this roller is to equalize and level the surface of the pulp-beds after the pulped material has been deposited. The same result may be obtained by the substitution of a fixed gage or profile board extending from the vessel over the bed.

Underneath the pulp-beds there are placed at right angles subsoil-drains T at intervals of about ten feet. In the formation of these pulp-beds the sods are removed for the space to be occupied by the drain, which will be about nine inches in depth and four inches in width. The succeeding strip of sods is then removed and placed upside down over the top of the drain. A succeeding strip of sods is then placed also upside down in the place of the last strip, and so on until the next drain is reached at the distance of ten feet from the first one, which is excavated and treated in a similar manner, and so on. A smooth surface is thus produced in advance of the canal to be excavated of from thirty to thirty-five feet in width. On the side next the vessel a small dyke, *d*, is built with the sods taken from the surface of the canal to be excavated. It will be about two

feet six inches in height and two feet on the base, as shown in Figs. 2 and 3. On the opposite side of the bed the pulp may be retained by boards or a similar dyke, *d'*. In the receptacle thus made and on the bed previously prepared the pulped peat will be deposited from the machine to the depth of from two to three feet, in accordance with the depth of peat being excavated, the subsoil-drains of the bed gradually carrying the moisture from the pulped mass above into the canal excavated.

The operation is as follows: The vessel being arranged in a suitable locality, and with its machinery in working order, the peat is delivered, by means of the screw-excavators and elevator, into the hopper D, down which it passes into the upper end of the inclined trough E, where it is seized by the powerful revolving vanes J, by which it is carried forward and forced against and through the spider-diaphragms I, being cut and partially pulped in its passage by the shearing and crushing action of the peculiarly-shaped vanes and diaphragms before described. Arriving at the end of this trough, the peat, having become partially pulped, now enters the separator F, the revolving and fixed arms of which disengage the grosser matter, sticks, &c., and discharging the same through the door M, while the now cleansed peat proceeds around to the pulping and distributing trough N. Arrived at this point, the peat is seized by the rapidly-revolving vanes P and forced along the inclined trough to the pulp-bed.

In the first section of eight feet the fixed skeleton-diaphragms *c* are provided with one arm only, in order that the pulping may be partially performed without retarding the onward progress of the material. Arriving at the second section, and having become more homogeneous, the diaphragms are provided with two arms, and as it passes into the third section, having become nearly semi-fluid, four arms are given the diaphragms in order that the operation may be completed and the mass of peat rendered perfectly homogeneous in its character. From the end of the third section of diaphragms the pulp is carried onward by vanes only, and is allowed to run through apertures, doors, or valves in the trough, and fall upon the bed previously prepared, when the surface is regulated by the roller R or its equivalent.

The pulp is allowed to remain, according to the state of the weather, until the surface shows symptoms of cracking, when the surface, to a depth of nine inches, is cut into squares of about six inches by means of a suitable knife or cutting apparatus. The sub-drainage from the under side and the evaporation from the upper side cause the mass to subside several inches and the whole to become consolidated. In this state it may remain through the winter or during a rainy period. When a proper season arrives the blocks, as marked on the surface, are cut out to the full depth by means of an angular spade,

removed, and laid on their sides on the inverted turf, where they remain exposed to the weather until sufficiently dried to be fit for market.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The pulping-trough and separator E F, provided, respectively, with the spider-diaphragms I and fixed bars K, and also provided with the shaft G, having upon it the vanes J and bars L, all arranged to operate in the manner substantially as and for the purpose set forth.

2. The pulping and distributing trough N, provided with diaphragms c, having a varying number of arms, and also provided with

valves, apertures, or slides Q at its bottom, and with a shaft, O, having vanes P upon it, arranged to operate substantially in the manner as and for the purpose specified.

3. The combination of the screw-excavators, elevator, and pulping mechanism, applied to a vessel and arranged for joint operation substantially as and for the purpose set forth.

4. The preparing of the peat-beds with sub-soil-drains, substantially as described, when used in connection with a vessel provided with an excavator and pulping apparatus, substantially as set forth.

JAMES HODGES.

Witnesses:

R. V. WINDAGE,
JNO. WALSH.