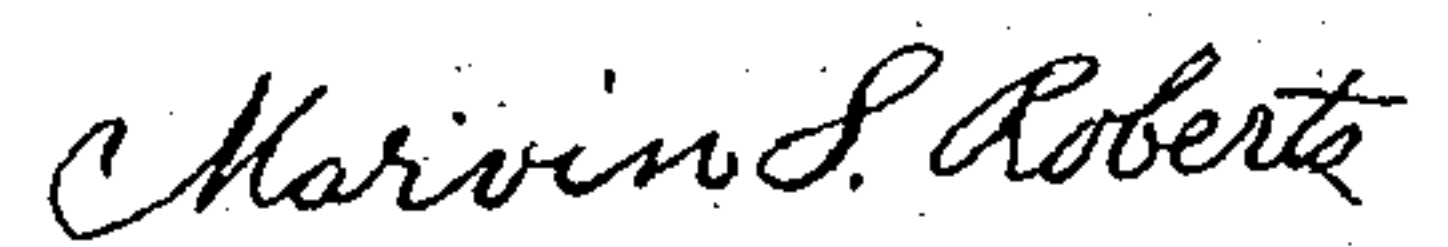


Peat Machine.

Patented July 28, 1868.



United States Patent Office.

MARVIN S. ROBERTS, OF RACINE, WISCONSIN.

Letters Patent No. 80,309, dated July 28, 1868; antedated July 14, 1868.

IMPROVED PEAT-MACHINE.

The Schedule referred to in these Letters Patent and making part of the same.

TO ALL WHOM IT MAY CONCERN:

Be it known that I, MARVIN S. ROBERTS, of Racine, in the county of Racine, and State of Wisconsin, have invented new and useful Improvements in "Peat-Machines;" and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 represents a section of the digger, crusher, and other parts of the machine.

Figure 2 is the front elevation of the digger, with half number of buckets.

Figure 3 is an enlarged section of a bucket and the elevation of the rear side of the same.

Figure 4 is an enlarged section of the small conveyer.

Figure 5 is a ground plan, taken on the line Z' Z' of digger, small conveyer, crusher, and travelling-carriage of the upper deck, and

Figure 6 is a ground plan of the bow of the boat, and a semicircular gear, along which the digger travels.

Similar letters of reference in the several figures denote similar parts of the machine.

My invention consists of several improvements on my peat-machine, for which Letters Patent have been granted to me, August 15, 1865, and April 9, 1867; and their nature consists, first, in a boat, to be used on watery bogs, so constructed as to conveniently carry all the necessary machinery and fuel; also provided with a filter to clean and a chamber to contain water taken from the same bog, to supply the boiler of the steam-engine; second, in a digging-apparatus, so constructed and arranged as to dig peat and deliver the same on the small conveyer, said apparatus being provided with two distinct motions, viz, one up-and-down motion, for the purpose of digging deeper or shallower into the peat-bed, and the other side-motion, performed on a half-circular curve around the bow of the boat, for the purpose of embracing and digging at once a track of peat-bed of considerable width; third, it consists in a small conveyer, so constructed as to receive the peat delivered into it by the digging-apparatus, and to convey the same to the grinder; fourth, in a grinder so arranged that the peat delivered into it by the small conveyer is thoroughly ground and pulped, said grinder being provided with a hoop, to pass the peat from the grinder into the large conveyer, which conveys the peat to the shore, and spreads it in any desired thickness and at any distance from digging.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

A is a flat-boat, two feet deep, and fourteen by forty feet (more or less) round in the bow, or its forward part, and square at the stern. It is provided with a steam-engine to work the machinery, and with a filter to clean and a chamber to contain water, taken from the bog itself, to feed the boiler of the engine, the boiler being placed at the back end of the boat. The boat is drawn forward by a capstan placed on the boat, a stake being driven in front of the bow, at a convenient distance, to which a rope is attached and passed around the capstan.

Resting on the top of and secured to the ledge of the bow is a semicircular spur-gear, A', corresponding with which another similar spur-gear, A'', is secured to the bottom of the timbers of the upper deck B, serving as support to the carriage C and other machinery, both decks being strongly united by proper framework, the semicircular gears A' and A'' being for the purpose of moving the digging-apparatus D, and feeding it regularly and continuously on half a circle of the width of the boat's diameter.

The digging-apparatus D consists of the outer box E, plunger F, and an endless chain, G, to which digging-buckets H H are secured.

Box E rests on and slides along the gear A', to facilitate which movement rollers are placed between its side and top flanges, E'', and the side and top of the boat's ledge. At the top it is secured to the carriage C, sliding on rollers on the upper deck, on a semicircular rail of the width of the boat's diameter, and connected by hanger I with main shaft K, serving as centre to the carriage C and box E movements.

Plunger F is box-shaped also, and slides up and down in the box E by means of a rack, a, secured in the

interior to one of its sides, and gearing into a pinion, *b*, set on the shaft *c*, journaled to the outer box *E*, and worked by means of pinion *z'* gearing into the bevel double wheel *d*, working on a feather on the upright shaft *f*. Shaft *c* and its pinion *z'* are put in or out of gear with shaft *f* only when up or down movement of the plunger *F* is required. Rollers are put between box *E* and plunger *F* to keep the latter in its proper position.

For the purpose of moving digging-apparatus *D* back and forth on the circle of gears *A'* and *A''*, the upright shaft *f* is provided with bevel-pinions *h* *h'* at its ends, the first gearing into the bevel-pinion *i* of the horizontal shaft *L*, supported by the carriage *C*, and connected with main driving-shaft *K*, while *h'* gears into pinion *k* of the horizontal shaft *M*, pinion *l* of which gears into double wheel *m* of the shaft *N*, provided with pinions *n* *n'* gearing into semicircular curves *A' A''*.

Now, as the main shaft *K* revolves shaft *L*, this revolves shaft *f*, which, in its turn, revolves shaft *M*, and this revolves shaft *N*, and as all this shafting is secured to the digging-apparatus *D* and carriage *C*, the apparatus may thus travel back and forth along the gears *A'* and *A''*. The double wheel *m* works on a feather, and, by means of an arm, *O*, pinned at *O'*, and lever *P'*, may be moved up or down, and, in order to produce the movement automatically, lever *P'* is provided with a weight, *W*, at the end, and as the apparatus *D* reaches the end of the curve *A'*, the end of the lever *P'* strikes against stop *Q*, secured to the upper deck, and assumes a reverse position, throwing the wheel *m'* or the wheel *m''* into gear with pinion *l*, thus moving the apparatus *D* one way or the other. But when it is desirable to stop the apparatus, without stopping the machinery at any point of the curve *A'*, lever *P'* is put by hand into a vertical position, and the double wheel *m* being thus disengaged from pinion *l*, the apparatus stands still.

The digging-device consists of buckets *H H*, secured to the cross-rods of the endless chain *G*, passing over deep-grooved pulleys *R R*, at the top, provided with reels, *R'*, to work the chain, and pulleys *S S*, at the bottom of the plunger, the outside flange of which, *T*, forms a sharp-edged cutter, for the purpose of cutting peat as the digging-apparatus is travelling, and to thus facilitate the excavation of peat by the buckets.

Reels *R'* are provided with shaft *a*, pinion *t* of which gears into a pinion of the shaft *n*, worked by the horizontal shaft *L*. Each bucket *H* consists of four sides, the back side, *a'*, of which is so placed that the sides *b'* and *c'* project beyond it, and receive the cross-rods *d' d'*, over one of which latch *e'* is passed, that has a notched end, and is provided with coiled spring, that keeps it off the back side *a'* of the bucket, and is for the purpose of closing or opening the movable bottom *f'* of the bucket, hinged to the front side *z''* of the same.

There are two wedge-like stops, one, *q*, secured to the box *E*, and the other, *r*, secured to the hopper *U*, on the inside, the last to act on the latch *e'*, in the ascension of the buckets, and open their bottom, *f'*, thus discharging peat into the hopper *U*, and the other to close their bottom on their descent into the bog. Guides *h'' h''* are firmly secured at a proper angle to the top of the buckets, for the purpose of guiding the peat of the upper bucket, when it is delivered into the hopper, by the guide of the lower bucket, preventing the same from falling into this bucket, instead of falling into the hopper *U*. But as this arrangement necessitates small spaces between the buckets, and as sometimes it is desirable to space them wider, hence the guides *h'' h''*, instead of being secured to the buckets, may be secured to the cross-rods of the chain, between the buckets, thus answering the same purpose.

Back sides *a' a'* are provided with notches *k' k'*, cut in them from the bottom upwards, for the purpose of discharging water, when bucket is filled with peat, and if grass, roots, or other objects that are in the peat should partially clog these openings, every time when the bucket is discharged the openings becomes clear.

Other sides may be provided also with openings for similar purposes, but these are easily stopped with grass, moss, &c., of the peat, if not opened through to the bottom of the bucket.

The peat thus excavated by the buckets *H H* is discharged into the hopper *U*, placed over the small conveyer *B*, consisting of an endless chain, *X*, provided with slats *l' l'* placed edgewise on the chain, and the chain enclosed into an open box, *Y*, the pulleys of the chain being worked by the main shaft *K*. This conveyer *V* conveys peat into the grinder *Z*, consisting of grinding-plate *B'*, slightly convex on the upper side, provided with teeth *n'' n''*, and firmly secured to the main driving-shaft *K*. It moves inside of the stationary concave, *C'*, that has two arms, *a' a'*, provided with teeth, also, placed opposite the spaces between teeth *n'' n''* of the grinding-plate.

The concave, *C'*, is secured to the timbers of the frame with set-screws *p' p'*, by means of which it may be raised or lowered for the purpose of regulating the grinding-apparatus, that it may grind either coarse or fine, as desired.

The plate *B'* and the concave *C'* both are provided with furrows *r' r'*, like millstones, at their edges, and so situated as to cross each other, their object being to crush the peat as it is thrown to the edge of the plate *B'* by the centrifugal force. The outside rim of the plate *B'* is also provided with spurs *D' D'*, to carry peat along and out of the hoop *E'*, through its bag *F'*, forcing it into the great conveyer *G'*. The hoop is placed on the outside of the plate *B'*, resting on the support *H'*, being firmly secured to the conveyer *G'*, and partially moving when the conveyer moves.

This conveyer was patented and fully described by me in the specification in the Letters Patent granted to me, April 9, 1867, and is marked there by letter *E*.

The operation of the machine consists in the following: The boat being placed in the water of the bog, and the capstan and stake, with rope, being properly arranged, the machinery is started, the plunger of the digger is adjusted to a proper depth, and double wheel *m* put in gear. The buckets will commence to excavate the peat, and deliver it into the hopper *U*, while the digging-apparatus is travelling on the curve *A'*, the number and motion of the buckets being calculated to correspond with the movement of the digger. The excavated peat being delivered into the hopper *U*, is conveyed to the grinder *Z*, is crushed and pulped there, and conveyed to the shore by the conveyer *G'*.

When bog is excavated to a desirable depth, of the width of the boat, the last is advanced by the capstan to the width of the excavated space, and the operation is repeated. In this way, a track of fourteen feet wide (more or less) of the bog is excavated right along, and the peat spread to dry.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The digging-apparatus D, consisting of box E, plunger F, and endless chain G, with buckets H H, combined and operating as described, and the whole secured to the boat A, and provided with continuous automatic movement along the semicircular curve A', by means substantially as described, or other equivalent means.

2. The mode of automatically regulating the semicircular to-and-fro movement of the digging-apparatus D along the curve A', by means of double wheel m, lever P', and stops Q, substantially as herein set forth and specified.

3. The perforated buckets H, provided with the hinged bottom F' and spring-catch e', in combination with the guides h'', when arranged to operate as described.

4. The segmental gear A' and A'', arranged as described, in combination with the digging-apparatus, and the mechanism for operating the same, substantially as herein described.

5. The cutting-flange T of the outer pulley S of the flange F, to cut peat in the bed, and to thus facilitate the operation of the buckets, substantially as set forth.

6. The grinder Z, consisting of revolving toothed and furrowed plate B', provided with spurs D' D', and constructed as described, and of stationary furrowed concave, C', provided with toothed arms o' o', and operating by means of set-screws p' p', the whole arranged and operating substantially as set forth, for the purpose of crushing, working up, and pulping peat, as described and specified.

7. In combination with the grinder Z, the partially-revolving hoop E', provided with bag F', constructed as described, and secured to the great conveyer G'.

8. The boat A, constructed as described, in combination with digging-apparatus D and grinder Z, to be used on watery peat-bogs, substantially as herein described.

MARVIN S. ROBERTS.

Witnesses:

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S. SCHOTT.