B. HOTCHKISS.

Peat Machine.

No. 60,730. Patented Jan'y 1, 1867.

Fig. 3.

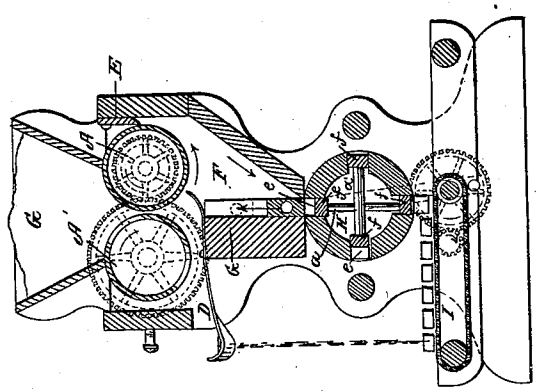


Fig. 1.

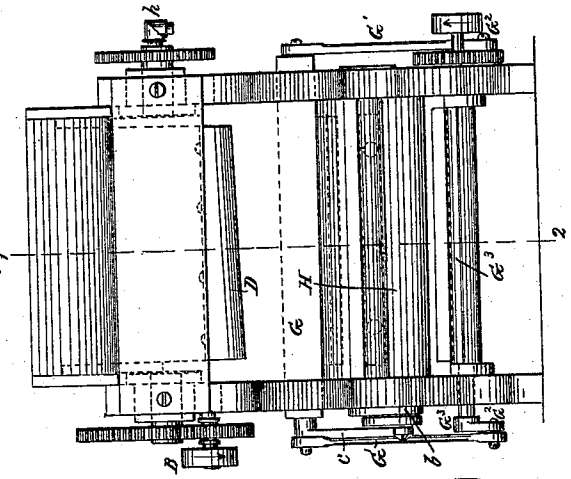
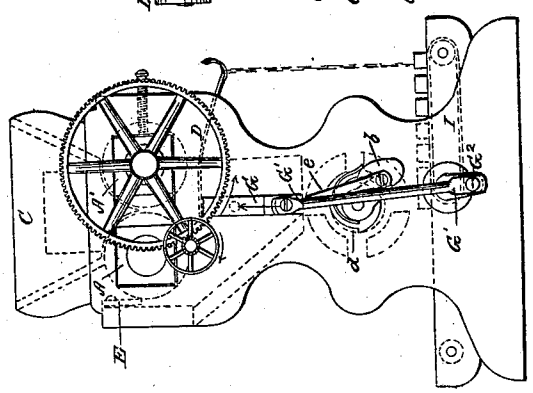


Fig. 2.



Witnesses:
Dennis Tuttle.
Annie A. Tuttle.

Inventor:
Bennet Hotchkiss.

United States Patent Office.

BENNET HOTCHKISS, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO HIMSELF AND CHARLES MONSON.

Letters Patent No. 60,730, *dated January* 1, 1867.

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, BENNET HOTCHKISS, of New Haven, in the county of New Haven, and State of Connecticut, have invented certain new and useful improvements in Machinery for Preparing and Moulding Peat, and other plastic materials to be used for fuel or other purposes; and I do hereby declare that the following specification, taken in connection with the drawings making a part of the same, is a full, clear, and exact description thereof.

Figure 1 is a front elevation.

Figure 2 is a side elevation.

Figure 3 is a vertical section on the line 1 2 of fig. 1.

The object of my invention is to produce a machine for suitably preparing and moulding into the form of cakes plastic material of various kinds, as, for instance, peat or the various artificial compounds which are employed for fuels. While, however, it is especially adapted for this purpose, it can also be employed for tempering and moulding clay for bricks without any substantial change of structure.

The first feature of my invention consists in a means for extracting the surplus water from the composition, whether peat or other plastic compound, and at the same time tempering the material and rendering it homogeneous. In most other machines for similar purposes reliance is had upon the extreme pressure during the operation of moulding the cakes for expressing the water with which peat in particular is saturated. The cakes are then required to be exposed to atmospheric influence for a considerable time before they are sufficiently dry for use, the process of evaporation going on very slowly where the particles of matter are so closely packed together. The principle which I employ is, in the first instance, to separate the particles of matter from each other by subjecting the mass to the action of grinding surfaces, so arranged that while disintegration is taking place, and the mass being tempered or rendered of uniform consistency, the excess of water shall be rejected; and secondly, to mould the material so prepared, and in a comparatively dry state, into the form of convenient blocks or cakes for use.

In the accompanying drawings A A′, figs. 2 and 3, are strong cylinders of cast iron or other proper material, mounted in a substantial frame and geared together, whereby the motion of their surfaces will be in opposite directions, as indicated by arrows. Motion is given to the cylinder, A, by means of a driving-belt passing over the pulley, B, on the axle of such cylinder, as shown in fig. 1. These cylinders, it will be observed, are of unequal diameters, or they may be of equal diameters but have different rates of revolution, and consequently any material passing between the two will be subjected to a tearing action proportioned to the difference between the respective rates of surface motion of such cylinders. C is a hopper of ordinary construction located above the cylinders, as shown, (fig. 3,) so that its contents will when discharged pass between the cylinders, A A′, and be thoroughly ground. This operation will cause the great majority of the water to be squeezed from the mass and fall directly upon the apron, D, whose surface is inclined and its edge turned up to form a gutter, by which the water is conducted away from the machine. The material so disintegrated and pressed between three cylindrical surfaces of different rates of motion will retain only sufficient moisture to enable it to adhere to the surface of the cylinder which has the quicker surface movement, to which it attaches itself by preference on the same principle that in a carding engine the fibrous material is taken up by the carding cylinder which has the quicker rate of revolution. The peat or other plastic material so plastered upon the surface of the cylinder, A, is removed therefrom as the cylder revolves by the edge of the stationary scraper, E, and so soon as dislodged it falls into the receiving and conducting trough, F, for the next operation. A similar scraper may also be employed to clear the surface of the cylinder A′, if desired. I propose also to construct the said cylinders in such way that they can be heated as by the introduction of steam through a pipe introduced through the journal, as shown at *h*, fig. 1, or in any other convenient way, so that the material shall be more thoroughly freed of moisture during the process of disintegration than it would be by pressure alone, and render it more plastic and cohesive. The second feature of my machine consists in the means employed for moulding the peat or plastic material into the form of blocks after it has been prepared as above explained. The devices and combinations which I employ are as follows: G is a strong unyielding bar extending transversely from side to side of the machine, to which an upward and

downward movement is imparted by means of the connecting-rod, G, (fig. 1,) pivoted to the bar at each end, the connected rod being operated by cranks, G^2, or their equivalents upon the shaft, G^3, and to which shaft a rotary movement is given by suitable means. Underneath the bar above described, and parallel with its lower surface, is a cylinder, H, which contains in this instance four moulding boxes, *e e*, the construction of which is shown in section in fig. 3. The bottoms, *f*, of the boxes are movable, those on opposite sides of the cylinder being connected together by rods, *a a'*, and are fitted to move like pistons in their respective boxes, so that when the moulding box upon one side is filled with peat and the bottom depressed to its lowest point, the bottom of the opposite box will be nearly or quite flush with the surface of the cylinder, and expel the contents of the box to which it belongs. The cylinder, H, containing the moulding boxes, has an intermittent rotary movement given to it by means of the pawl *b*, operated by the rod *c*, connected with and moved by the pressing bar G, in combination with the ratchet-wheel *d*, upon the end of the cylinder, and such cylinder will be by such means caused to make one-fourth of a revolution at every upward movement of the pressing bar.

From the foregoing it is obvious that the peat or other plastic material which has been discharged into the conducting trough, F, will be deposited over the mouth of that one of the moulding boxes which is in position to receive it, whereupon the pressing bar, G, will descend and force the same into the box, compressing it into a dense cake. The cake so formed will remain in the box until the cylinder, H, has made a half revolution, when, as the box upon that side is filled, the pressed cake in the opposite box will be forced out and fall upon the endless apron, I, receiving motion from the shaft, G^3, by which apron it is conveyed to a convenient place for removal by an attendant.

I do not mean to limit myself to the precise construction or arrangement as described, but to include all mere formal variations of form and structure accomplishing the same mode of operation. Neither do I mean to limit so much of the invention as resides in the combination of grinding surface of unequal rates of surface motion with an apparatus for moulding into cakes the plastic material so prepared to the combination of such grinding surfaces with the particular moulding apparatus shown, inasmuch as other arrangements for moulding the material may be so used in combination with such grinding surfaces and be within my invention.

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

1. The use, in a machine for preparing peat or other plastic material, of the grinding surfaces A A^1, having unequal rates of surface motion, coöperating in the manner described, to effect disintegrating the material, expressing the surplus water, and taking up the product upon the grinding surface having the faster rate of movement, substantially as set forth.

2. The combination in such machine of the following instrumentalities: the cylinders A A^1, or equivalent grinding surfaces having unequal rates of surface motion, and the scraper E, substantially as described, for the purposes specified.

3. The combination in such machine of the following instrumentalities: the said grinding surfaces A A, having unequal rates of surface motion, the scraper E, and the receiving and conducting trough F, substantially as described, for the purposes specified.

4. The combination in such machine of the following instrumentalities: the said grinding surfaces A A^1, having unequal rates of surface motion, and the apron D, or other equivalent device for receiving and conducting away the surplus water expressed by the cylinders, substantially as set forth.

5. Combining in such machine grinding surfaces operating as described, with an apparatus for moulding the peat or other plastic material, the combination being substantially as specified.

6. Constructing the cylinder H with moulding boxes and pistons, substantially as described, and operating the same in combination with the cam presser G, substantially as set forth.

BENNET HOTCHKISS.

Witnesses:

KEZZIE W. FULLER,

A. U. TUTTLE.