F. LEACH.

MACHINE FOR PRESSING PEAT.

No. 66,093. Patented June 25, 1867.

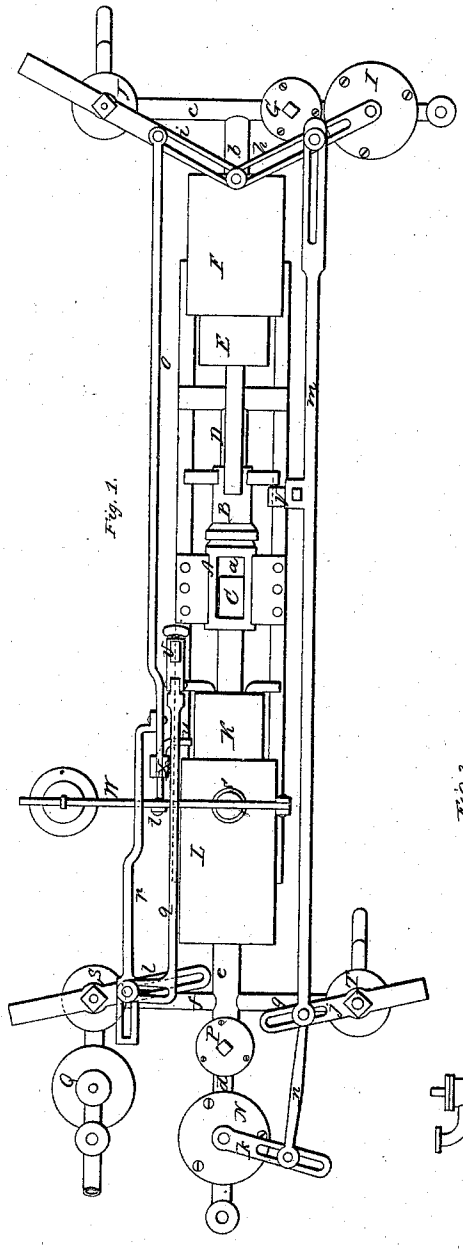


Fig. 1.

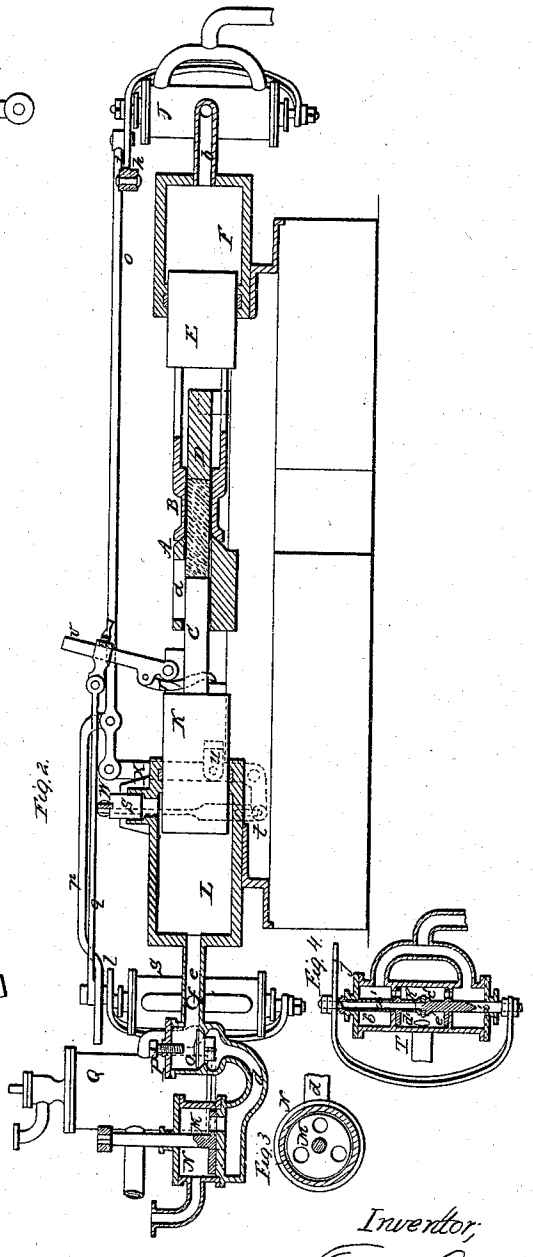


Fig. 2.

Witnesses:
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United States Patent Office.

FREDERICK LEACH, OF TIOGA, NEW YORK.

Letters Patent No. 66,093, *dated June* 25, 1867.

IMPROVED MACHINE FOR PRESSING PEAT.

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, FREDERICK LEACH, of Tioga, in the county of Tioga, and State of New York, have invented certain new and useful Improvements in Machines for Pressing Peat, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing, forming part of this specification, and in which—

Figure 1 represents a plan of a machine or apparatus for pressing peat constructed according to my improvement.

Figure 2, a vertical longitudinal section of the same; and

Figures 3 and 4 horizontal and vertical sections of valves used in this my improved apparatus.

Similar letters of reference indicate corresponding parts.

My invention has for its object the pressing of peat in a dry state into blocks or other moulded forms, for use as fuel and other purposes. It has long been a desideratum to thus press peat, but to give it consistency has heretofore been regarded difficult. The nature of my invention consists in novel apparatus for the purpose, embracing, among other distinguishing features, a combination of receiving-box, mould-box, stationary plunger, and pressing-plunger, the latter and mould-box being operated by fluid under pressure, and the same being controlled by valves furnishing the supply from different heads or pressures, and having automatic action in connection with the pressing-plunger and mould-box, giving a light and rapid pressure at first, and powerful action at the close of the pressing stroke, said apparatus also preferably employing peculiarly constructed balance-valves, capable of adjustment from the exterior, to facilitate their action under a heavy pressure of fluid.

Referring to the accompanying drawing, the peat, in a dry and loose or broken state, is fed, by any suitable means, into a receiving-chamber or box, A, through a longitudinal slit or opening, *a*. This box, which is stationary, is preferably of a cylindrical form, and lies in the same axial line as the mould-box B and pressing-plunger C, and should be made taper at its one end to receive over it the advance end of the mould-box, made flaring for the purpose, said mould-box working over or along a stationary plunger, D, while the pressing-plunger C is made to reciprocate within or through the receiving-box A, which it enters at the opposite end to that against which the mould-box is brought to bear. In the general action of the apparatus the mould-box B is first brought up to cover the taper end of the receiving-box A, and the peat, which is fed into the latter through the opening *a*, pressed into the mould-box by an advance movement of the pressing-plunger C, after which, and on the return or back stroke of the mould-box over the stationaay plunger D, the pressed peat drops, or is delivered therefrom, in a solid form. But there are peculiarities about these actions, and the means for accomplishing the same, which require a more minute description. The mould-box B, for instance, which may be brought up to its place against the receiving-box A, and in due time returned therefrom by a toggle-joint action or other suitable mechanical movement, or by compressed air made to act on a ram or piston connected with it, is here shown as operated by a ram, E, working in a cylinder, F, into which water, under the requisite head or pressure, is admitted by a pipe, *b*, that connects with a branch, *c*, the one portion of which carries, or is connected with, a check-valve arranged in a box, G, and which allows of the ingress of water to the cylinder, but prevents its egress, and receiving-valve that, accordingly as it is opened or closed, admits or shuts off water to or from the cylinder F, said receiving-valve, or its chamber I, deriving its supply by elbow and pipe connected therewith from a tank above. Connected also with the branch *c* is an exhaust-valve, arranged in a chamber, J, for allowing of the escape of the water to the cylinder F, and giving the back action, by suction, to the ram E after the pressing action on the peat. The pressing-plunger C may, for the early portion of its stroke, be similarly operated by water under pressure, as supplied from a tank, dependent for force of the pressure upon mere altitude; or a reservoir of compressed air, on the same level as the press, may be substituted for the water-tank, as a means of supplying power to the primary action of the pressing-plunger, with devices for regulating the admission of air to its cylinder to graduate its action; or a ram, controlled by a spring in one direction, and the force of compressed air in the opposite, may be used to control the entire action of the pressing-plunger; but as it is immaterial what fluid be employed, it will suffice here to refer to water power, under two separate or distinct pressures, as the means for operating the pressing-plunger. Thus.

water, under a comparatively limited head or pressure, is first admitted to the cylinder K, in which the ram L of the pressing-plunger works to project the latter and give the primary pressure, by supply from a tank above, on opening a receiving-valve, M, working in a box, N, and communicating by pipes *d* and *e* with the cylinder L, a check-valve, O, arranged in a box, P, being interposed and serving to prevent the return of water to or through the same receiving source. The finishing action to the pressing-plunger C, in its advance, is represented as derived from an hydraulic or hydrostatic power of considerably greater force, say by water subjected to a heavy pressure, through any suitable means, in a vessel, Q, from which it is passed, on the opening of a valve, R, arranged in a box or case, S, by a branch, *f*, into the pipe *e;* and after it has performed its work the water so supplied, and that previously admitted to give the primary action, allowed to escape by a branch, *g*, to the exhaust, on opening a valve arranged within a box or case, T. The several valves contained within the boxes I, J, N, S, and T are severally linked, preferably in an adjustable manner, by slotted connections or levers *h i j k l*, and rods *m*, *n*, *o*, and *p*, with each other, for their proper relative and automatic action, the lever *l* being further connected by a rod, *g*, with a lever, U, provided with a dog or pendent arm, *r*, for operation, by a projection from the pressing-plunger, in its advance movement, as hereinafter described; also the rod *m* gearing with a lever, V, which is operated by a connection from the mould-box in the advance movement of the latter. Furthermore, in this connection, the cylinder L is fitted with a valve, *s*, operating after the fashion of a safety-valve, under a heavy pressure in the cylinder; a weighted lever, W, which is attached, by a slotted connection, *t*, with a bell-cranked lever, X, pivoted at its upper end to the rod *o*, and serving, on the lifting of the valve *s*, to actuate said rod; the lever X being further provided with a pivoted arm, *u*, which is struck by a projection from the ram K in its return stroke, as will be hereinafter referred to. The receiving valves operating within the boxes I and N are, or may be, constructed as is represented by the one valve M, namely, of a single disk form, with perforations in it, and working over corresponding apertures in the seat on which it works; but the valves working in the boxes J, S, and T, and more especially those operating within the two latter, I prefer to make of a different construction, to secure a readily adjustable fit of them as regards tightness of their working surfaces, with a balance character to the same, and freedom, in travel, from excessive friction under the heavy pressure of fluid to which they are subjected. The peculiar construction of these valves is represented by the valve R in the box T, in which *a'* is the main stem of the valve, and *b'* a sleeve fitting over one half or portion of the latter, and terminating, at its inner end, in a shoulder, between which, and a shoulder on the stem *a'*, a suitable packing or yielding washer, *c'*, is introduced. *d' e'* are perforated disks, carried, the one by the stem *a'* and the other by the sleeve *b'*, within the receiving-chamber of the box, and in the oscillation of the valve caused to travel over or against perforated seats or partition-plates separating the receiving from the exhaust or escape-chambers. By this construction, and the application of any suitable devices to the outer ends of the stem *a'* and sleeve *b'*, say by nuts and a connecting-spring bail, operating on said stem and sleeve in a reverse direction to the packing *c'*, may the disks *d' e'* be adjusted to move in a close but comparatively frictionless manner over or against the seats or partition-plates, the apertures in which they serve alternately to open and cover.

In the operation of the apparatus, the receiving-valve in the box I being opened, and valves in the boxes J, S, T, and N being closed, the mould-box B is moved forward towards the taper end of the peat-receiving box A, and shortly before completing such advance stroke, actuates the lever V, and, through the rods *m* and *n*, opens the receiving-valve M of the box N, to admit water from the tank above to the cylinder L, to give the pressing-plunger C its primary advance movement on or against the loose peat in the box A, and which at first is thus readily compressed or forced into the mould-box B. To give the finishing pressing action, however, when a much greater force is required, the ram K, acting by a projection from it on the pendent arm *r* of the lever U, operates said lever, and, by the rod *q* and lever *l*, opens the valve in the box S, which passes water, under a much heavier pressure, from the vessel Q in the cylinder L, to urge forward, for the balance of the stroke, the plunger C. In this way the peat is hard pressed in the mould-box B; and on the pressure counterbalancing the resistance, as regulated by weight on the lever W, or rather exceeding the same, the valve *s* rises, and by said lever rod *t*, bell-crank X, rods *o p*, levers *l*, *i*, and *h*, rods *m n*, and levers *j k*, closes the receiving-valves in the box N, I, and S, and opens the exhaust or escape-valves in the boxes J and N, which action causes the mould-box B and pressing-plunger C to retire, delivering, by the action of the stationary plunger D, the pressed peat below in a hard or solid and dry form. As the ram completes its return stroke it strikes the pivoted arm *u*, and operating the lever X, reverses, by the several rods and levers before referred to, the position of the valves, closing the exhaust-valves in the boxes J and T, and opening the receiving-valve in the box I to give the mould-box and pressing-plunger, in due course, their respective and relative advance movements for a repetition of the pressing action on a fresh feed of peat into the receiving-box A. Thus it will be seen that an automatic action is secured to the apparatus operated as specified, under different and distinct pressures, whereby the necessary heavy pressure may be obtained on the dry peat to give it the required solidity without waste of such comparatively costly power or loss of time, by operating the pressing-plunger for the early portion of its stroke, and mould-box, in its advance movement, by or from different sources, as described.

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

1. The combination of the receiving-box A with the mould-box B, stationary plunger D, and pressing-plunger C, when said mould-box is operated by any suitable means, as described, and the plunger C, actuated by fluid under pressure, essentially as set forth.

2. The combination of the rams K E, cylinders F L, pressing-plunger C, mould-box B, with its stationary plunger D, and receiving-box A, substantially as shown and described.

3. The combination, with the ram K of the cylinder and its pressing-plunger, of valves controlling the supply of the operating fluid thereto from different sources or under different pressures, essentially as specified.

4. The automatic operation of the mould-box and pressing-plungers under different heads of pressures, by separate and distinct valves geared together for operation by the mould-box and pressing-plunger, substantially as herein set forth.

5. The valve R, constructed for operation and adjustment essentially as shown and described.

FREDERICK LEACH.

Witnesses:

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