

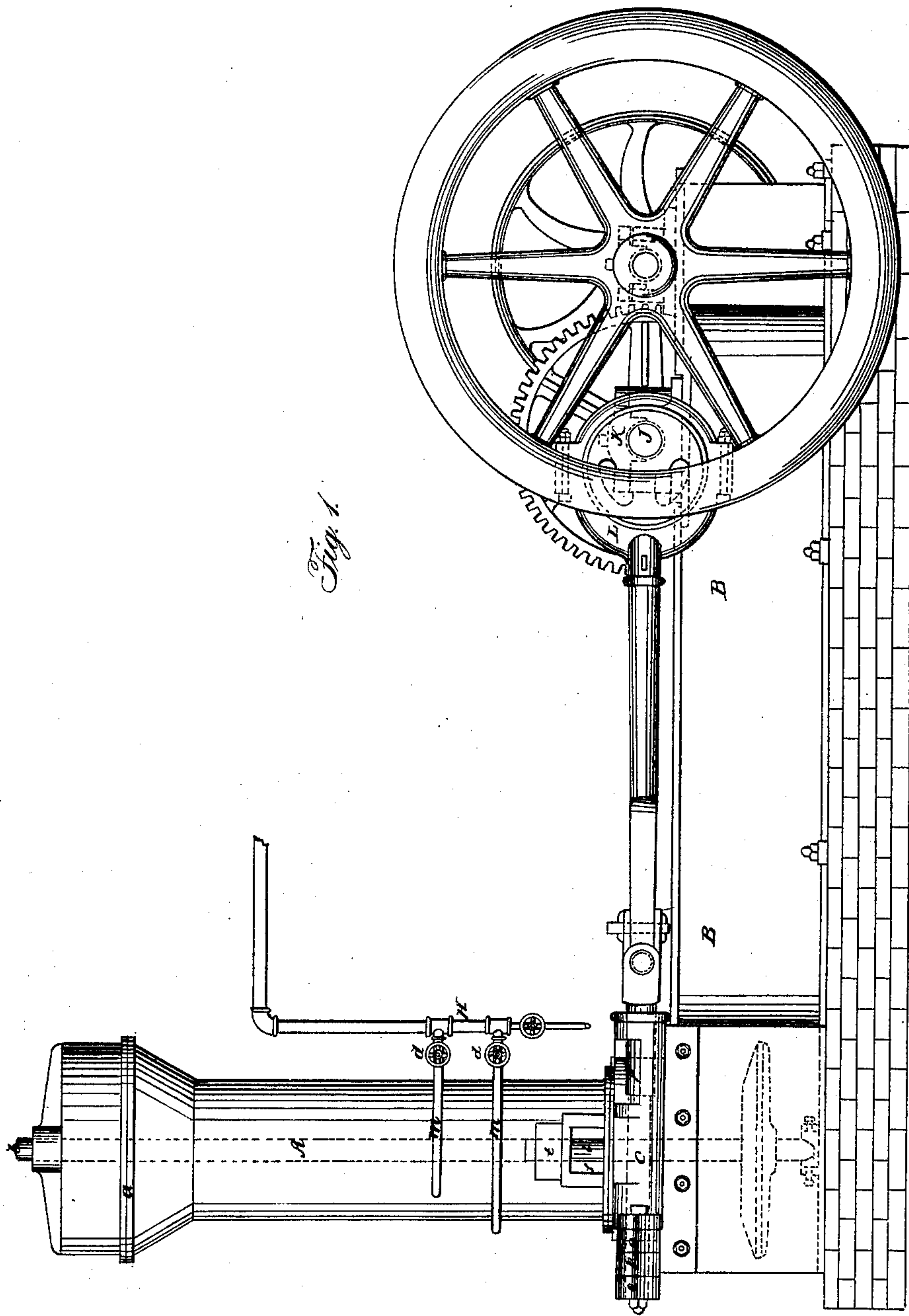
L. ELSBERG.

Peat Machine.

3 Sheets—Sheet 1

No. 57,489.

Patented Aug. 28, 1866.



Witnesses:

*W. L. Bennett*  
*J. W. Hurster*

Inventor:

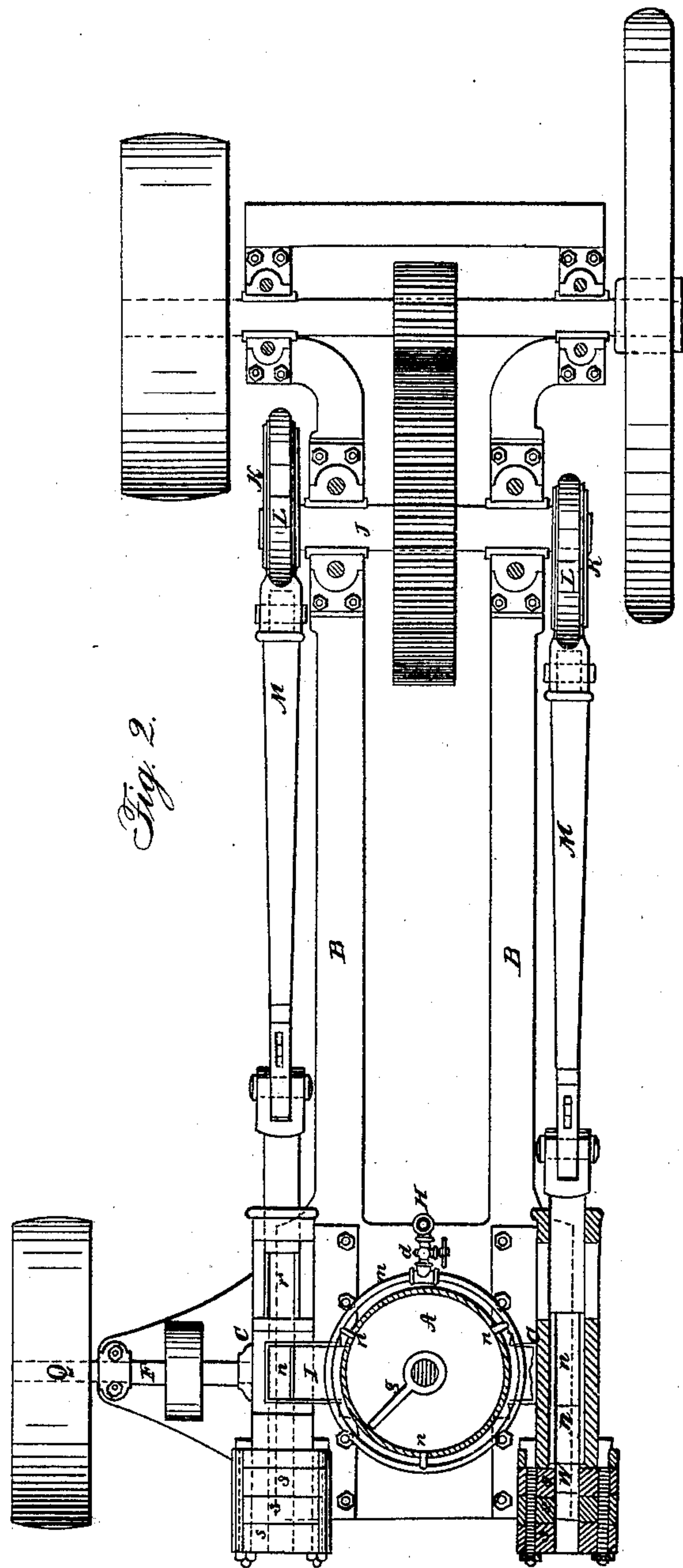
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Peat Machine.

No. 57,489.

Patented Aug. 28, 1866.



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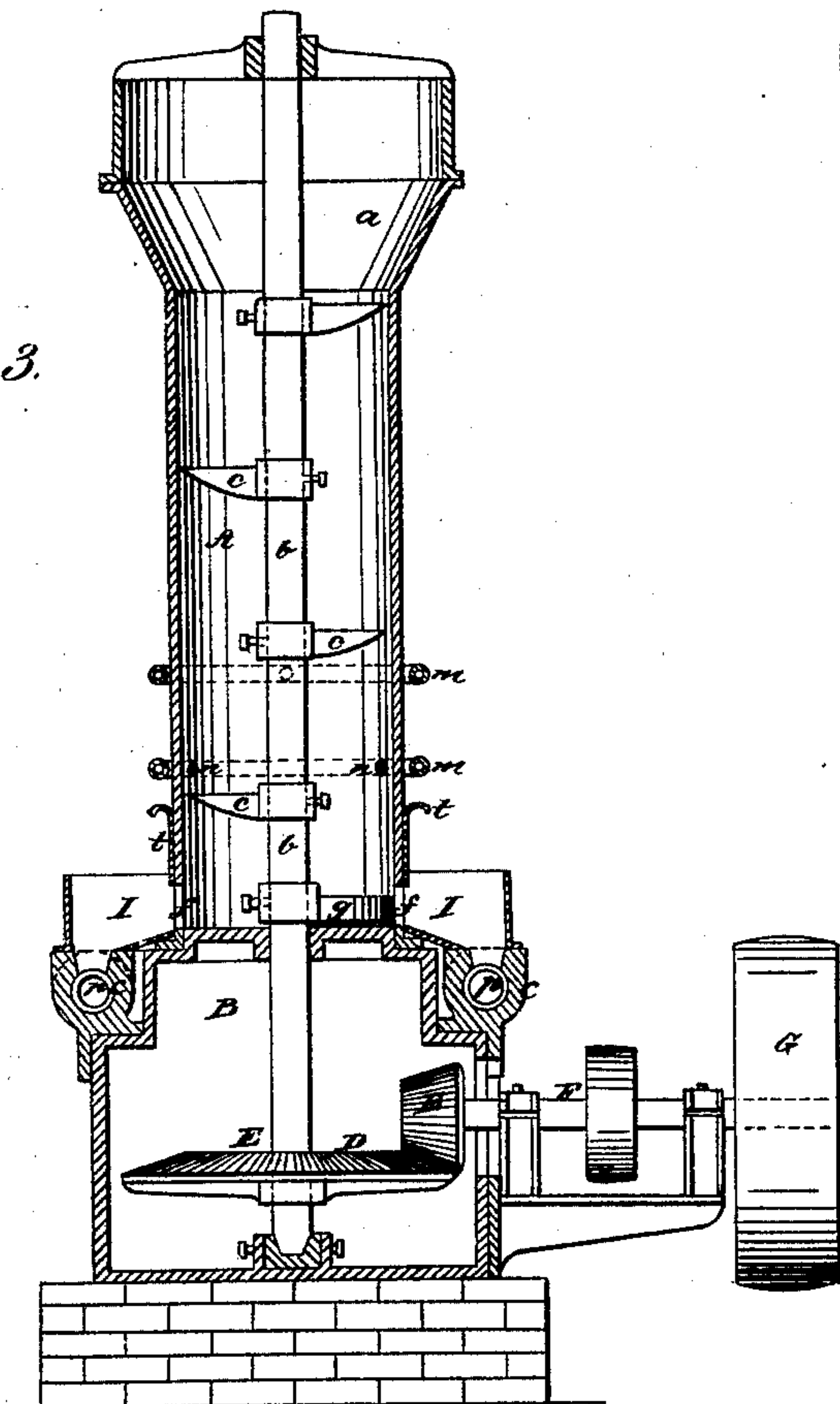
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Peat Machine.

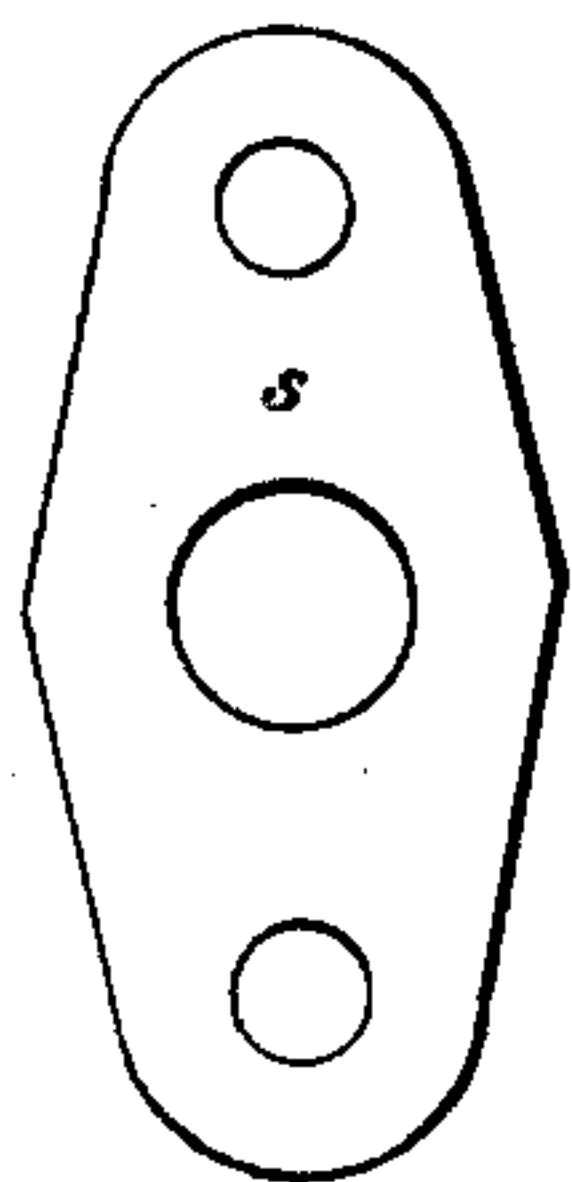
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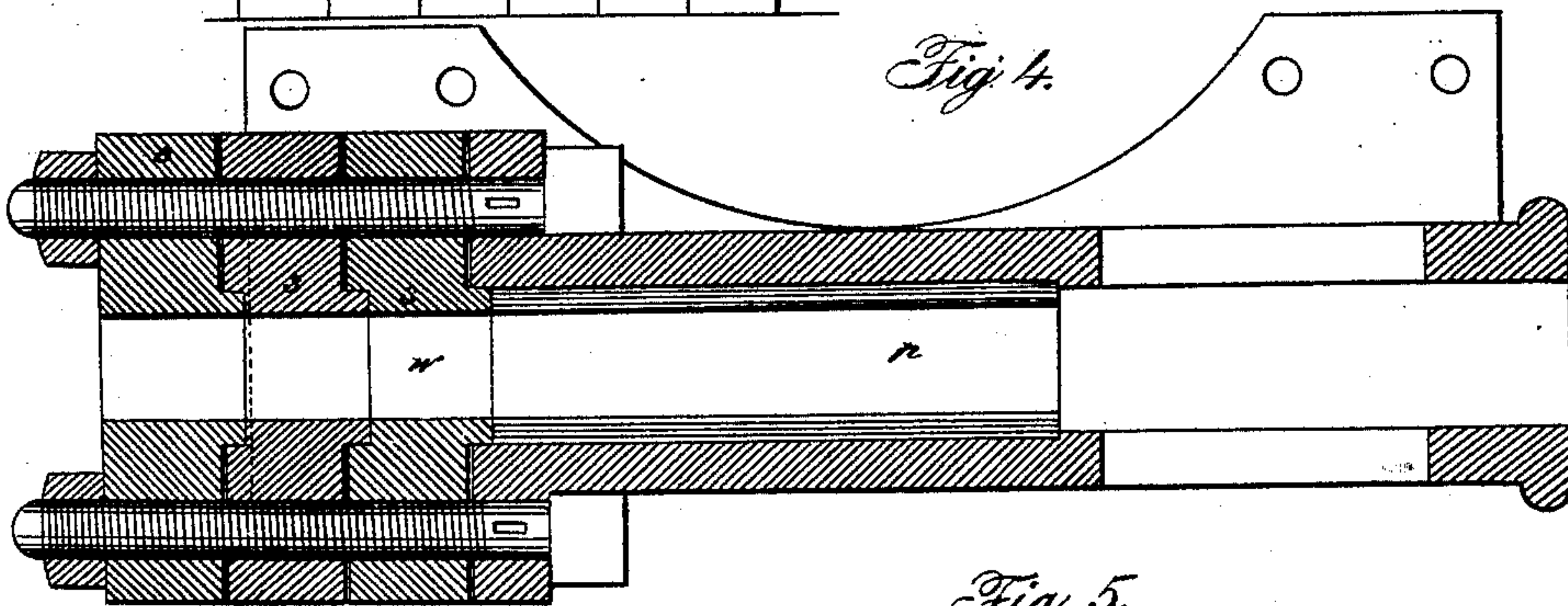
*Fig. 3.*



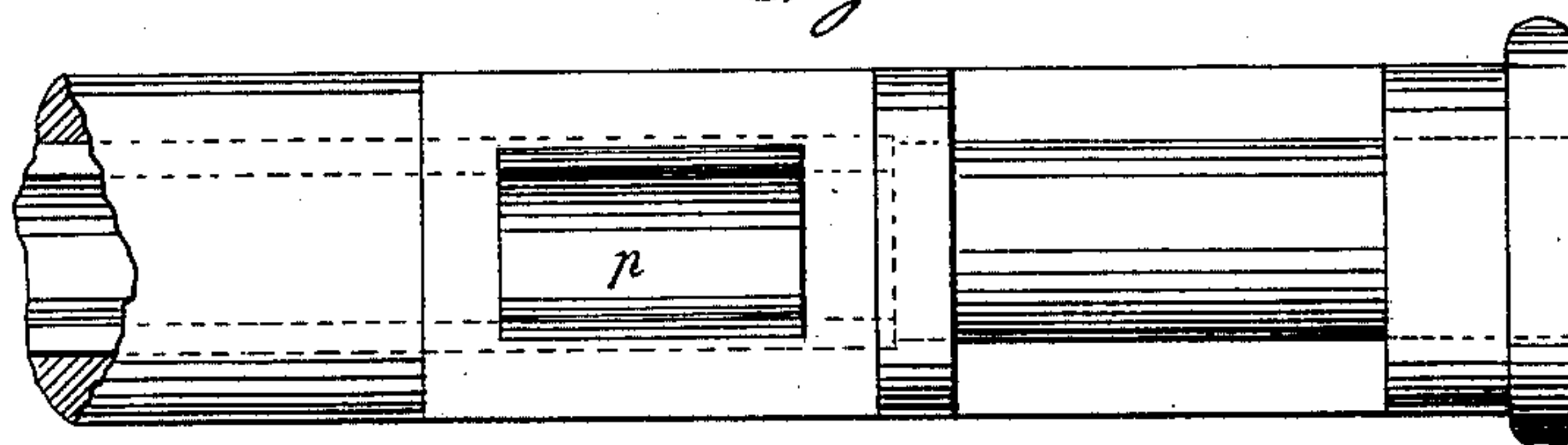
*Fig. 6.*



*Fig. 4.*



*Fig. 5.*



Witnesses:

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# UNITED STATES PATENT OFFICE.

LOUIS ELSBERG, M. D., OF NEW YORK, N. Y.

## IMPROVED APPARATUS FOR PREPARING PEAT.

Specification forming part of Letters Patent No. 57,489, dated August 28, 1866.

*To all whom it may concern:*

Be it known that I, LOUIS ELSBERG, of the city, county, and State of New York, have invented a new and useful Machine for Manufacturing Peat; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents a machine constructed according to my invention. Fig. 2 represents a plan of the same. Fig. 3 represents a transverse section of the machine at the line *xx* of Fig. 2; and Figs. 4, 5, and 6 represent views upon a large scale of parts of the machine.

The machine which constitutes the subject-matter of this patent is designed to manufacture peat into fuel by the process devised by me. It comprehends means of steaming the peat, of stirring or working it, of compressing it, and of delivering it in a compressed state automatically.

The first part of the invention consists of the combination of an agitator or grinding-instrument and a chamber therefor (fitted at its lower end with one or more delivery-openings) with a steam-pipe to supply steam to the material which is worked by the agitator in the chamber of the machine, so that the material may be steamed and worked as it passes through the chamber of the machine to the delivery-opening thereof, and the operations of working and steaming the material may be performed continuously.

The second part of the invention consists of the combination of a chamber for holding the material and a steam-pipe to supply steam to it with a reciprocating piston-press provided with a delivery-passage for the escape of the compressed material, and operating in such manner that the material compressed by one stroke of the piston or ram acts as the bed against which the material operated upon at the next succeeding stroke is compressed. This combination enables the material to be steamed and compressed by a continuous operation.

The third part of the invention consists of the combination of the second part of the invention with the agitator or grinding-instrument,

so that the peat subjected to the machine may be worked, steamed, compressed, and delivered by the continuous operation of the machine without intermediate handling.

The fourth part of the invention consists of the combination of the piston and piston-chamber of the press with a discharge-passage composed of sections or ajutages, a larger or smaller number of which may be used, according to the extent to which it is desired that the material should be compressed.

The fifth part of the invention consists of the combination of the piston and piston-chamber of the press with a discharge-passage whose interior is tapering, so as to increase the resistance to the movement of the compressed material through it, thereby increasing the resistance of the material to the movement by the piston, and consequently increasing the force with which the compression is effected.

In the machine represented in the accompanying drawings the chamber A of the agitator is mounted in an upright position upon a strong bed, B, which also sustains two reciprocating piston-presses, C C, and the mechanism for operating them. The upper end of this chamber is enlarged so as to form a hopper, *a*, into which the material to be treated can be readily thrown. The interior of the chamber is traversed by the agitator, which is composed of a central shaft, *b*, and a series of inclined blades, *c c c*, which, when the shaft is revolved, not only agitate and work the material, but also force it downward toward the delivery-apertures of the chamber. The lower end of the shaft *b* is fitted with a beveled wheel, D, which is driven by a beveled pinion, E, secured to a horizontal shaft, F, and this horizontal shaft is provided with a belt-pulley, G, to which power is applied by a belt.

The chamber is encircled by two ring steam-pipes, *m m*, which have branches *n n* that enter the barrel A, so as to supply steam to the material therein. These ring steam-pipes are connected with a main, H, proceeding from a high-pressure steam-boiler, and stop-cocks *d d* are inserted between the main and the ring steam-pipes to enable the supply of steam to be controlled.



At the lower end of the chamber A there are two delivery-apertures, *f f*, from which the material that has been worked in the chamber is ejected (by the action of a driver, *g*, secured to the shaft *b*) into two hoppers or passages, *II*, which conduct it to the piston-chambers *p p* of the presses beneath. The delivery of the steamed material into each of these hoppers is regulated by a slide, *t*, which may be moved to open the delivery-aperture *f* more or less. Each of these piston-chambers consists of a barrel, open at both ends, and is fitted at one end with a piston or plunger, *r*, to which a reciprocating movement is imparted from a revolving shaft, *J*, by means of an eccentric *K*, eccentric ring *L*, and rod *M*. Each piston-chamber is perforated at its upper side with an opening, through which the material to be compressed is permitted to pass into the chamber, and the stroke of the piston is such that during its forward movement its end passes beyond the opening, and thus cuts off the escape of the material that has been received in the piston-chamber, while in its backward movement it is withdrawn from beneath the opening to permit the material to enter. The end of the piston-chamber farthest from the piston is open to permit the material to be forced out by the pressure of the piston, and it is fitted with a series of ajutages or sections, *s s s*, more or less of which can be used to increase the length of the passage through which the compressed material is forced, thereby increasing the friction that retards its movement and the resistance which the compressed material affords to the action of the piston. The resistance to the passage of the material is further increased by making the interior of the passage tapering, so that the area of the end farthest from the piston is less than the area of the part nearest the piston. Hence the material, while moving through the delivery-passage, is compressed laterally, and, as greater force is required to eject it under that circumstance, the material in the delivery-passage presents a firmer bed, against which the portion received into the piston-chamber is compressed by the action of the piston.

When the machine is in use the peat thrown into the hopper is thoroughly worked and steamed in the chamber A of the agitator *b c*, and is also pressed down in the chamber, and is forced out of the delivery-apertures at the lower end thereof. Thence it passes to the presses C, a charge of material passing into each piston-chamber *p* during the backward movement of the piston. When the piston moves forward the charge so received is forced forward in the piston-chamber and into the delivery-passage *w*. The first charge so forced in is but slightly compressed; but as the next charge, which is pressed between the preceding charge and the piston, is compressed with the force required to move the preceding charge forward in the delivery-passage, and as that passage is sufficiently long to hold a number of

compressed charges, the frictional resistance to their movement speedily becomes very great, and, as the one nearest the piston forms the bed against which the last charge is compressed, it is compressed with all the force required to move forward the mass in the delivery-passage.

The resistance to the delivery, and consequently the force exercised in compressing the material, may be regulated by increasing or diminishing the number of ajutages or sections *s s s*, as found expedient, and as the passage *w* is tapering, so that the material is progressively compressed laterally, the resistance to the movement of the compressed mass is increased and a less length of delivery-passage is required than would be necessary if the passage did not taper. Moreover, the force which with a longer passage of uniform size would be expended in overcoming friction is made available to increase the compression of the mass.

In practice I find it expedient to make the taper of the delivery-passage about one-eighth of an inch to the foot in length; but this may be varied as found expedient.

The invention embodied in the machine thus described is not limited to any peculiar form of agitator or its chamber, although I believe that the forms represented in the drawings are the best, because the agitator and chamber therefor represented in the drawings may be replaced by an agitator or grinder of different form or construction having a chamber adapted thereto, provided the members so introduced perform substantially the same functions in the combinations as the members they replace; and several such grinders are in common use. Neither is the invention limited to any peculiar mode of imparting motion to the pistons of the presses, as a crank or other suitable means of imparting a reciprocating movement may be substituted for the eccentric, if deemed expedient. Nor is the invention limited to any form or construction of steam pipe or boiler, all that is essential being that the steam-pipe shall be so arranged as to deliver steam to the material in the chamber of the agitator or worker, and the steam-boiler must, of course, be strong enough to supply steam at a sufficiently high pressure to force its way into the mass of material which is under treatment in the chamber of the agitator or worker, or is placed in the chamber to be steamed before it is compressed.

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

1. The combination, in a machine, of the following implements, viz: the agitator, agitator-chamber, and steam-pipe, all operating in the combination substantially as set forth.

2. The combination, in a machine, of the following implements, viz: the chamber for the material, steam-delivery pipe, and reciprocating piston-press, all operating in the combination substantially as set forth.

3. The combination, in a machine, of the fol-



lowing implements, viz: the agitator, agitator-chamber, steam-delivery pipe, and reciprocating piston-press, all operating in the combination substantially as set forth.

4. The combination of the piston and piston-chamber of the press with a discharge-passage composed of sections, all operating in the combination substantially as set forth.

5. The combination of the piston and piston-chamber of the press with a discharge-pas-

sage whose interior is tapering, all operating in the combination substantially as set forth.

In testimony whereof I have hereunto set my hand this 14th day of March, A. D. 1866.

LOUIS ELSBERG.

Witnesses:

JOHN McNALLY,

W. HOSCANGAY.

J. JAROSLAWSKI,

HENRY WEISSENBORN.