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A. H. EMERY.

Peat Machine.

No. 57,303. Patented Aug. 21, 1866.

Fig. 1.

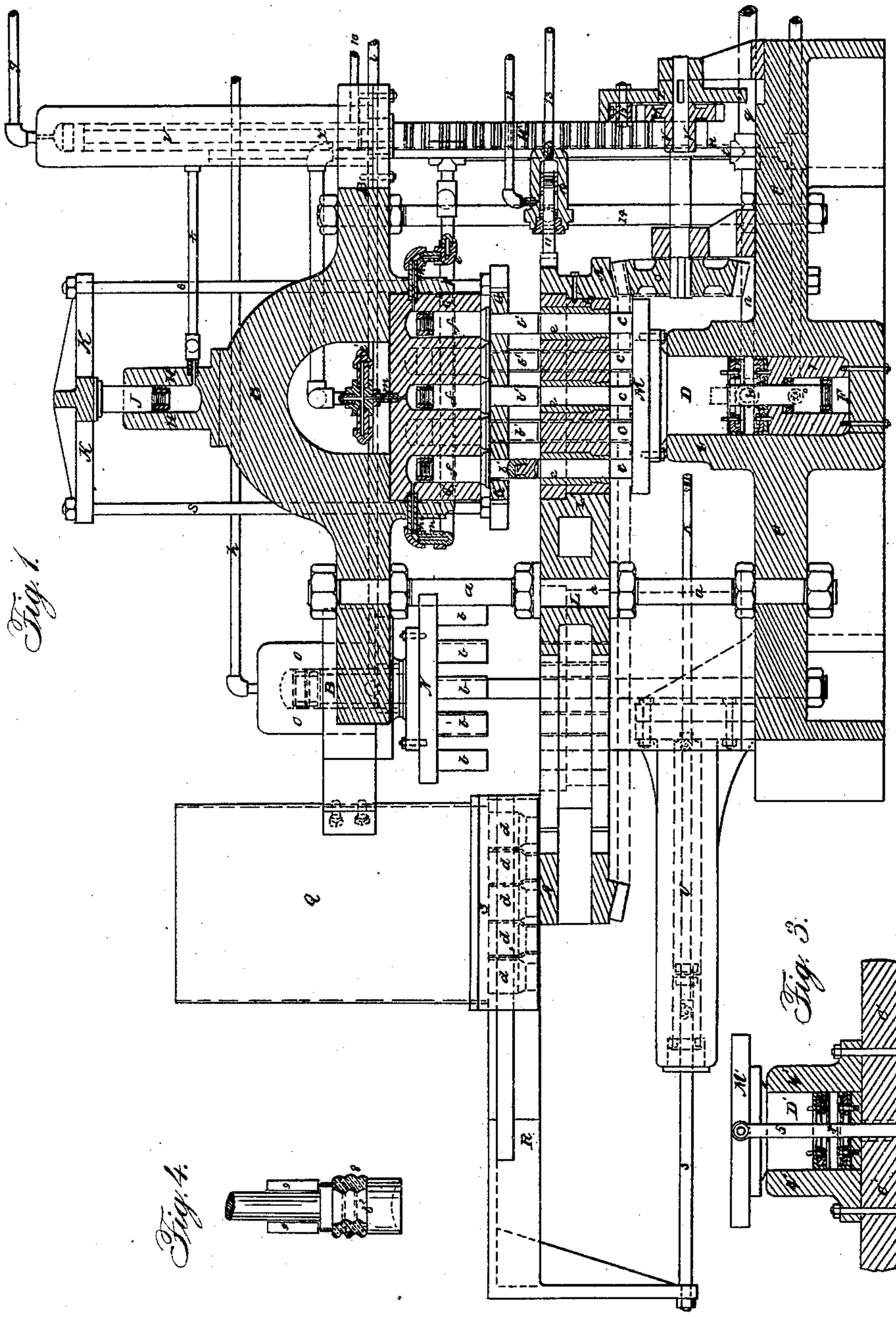

Fig. 4.

Fig. 3.

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2 Sheets—Sheet 2.

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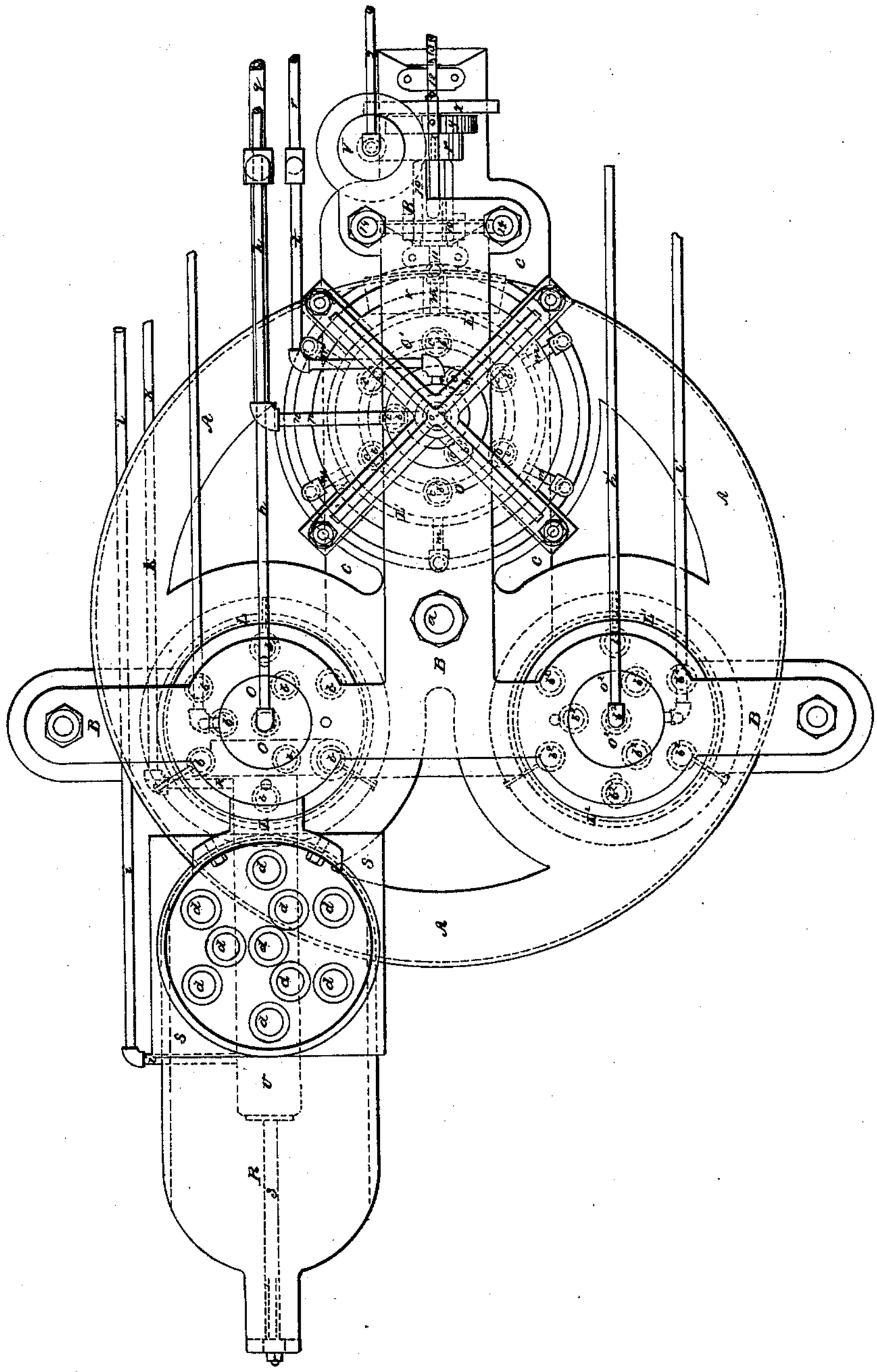
Fig. 2.



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UNITED STATES PATENT OFFICE.

A. H. EMERY, OF NEW YORK, N. Y.

IMPROVED HYDRAULIC PRESS FOR PEAT, BRICK, &c.

Specification forming part of Letters Patent No. **57,303**, dated August 21, 1866.

To all whom it may concern:

Be it known that I, A. H. EMERY, of the city, county, and State of New York, have invented a new and Improved Hydraulic Press; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in so arranging a rotating disk in combination with a series of hydraulic presses as to press brick or peat both rapidly and uniformly, as hereinafter described.

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

In the drawings like figures or like letters represent like parts.

Figure 1 represents a sectional elevation, and Fig. 2 a plan of the press complete.

The press consists of two main frames or beams, B and C, connected by the tie-rods *a* and 14 14. Around *a* rotates a large disk, A, in which sit disks or pieces L L′ L″, which have in them a series of holes, into which are screwed the dies 2 2 2, &c., of steel. Attached to the lower frame, C, is the hydraulic cylinder U, which is double-acting, carrying the piston 3 both ways by means of the water supplied to it through the pipes *i* and *k*.

To the piston 3 is attached the frame R, which is the charger. It is supplied with holes *d d d*, &c., which are filled with peat as it falls from the bottom of the hopper Q. These holes are lined with one or more linings, *d′ d′ d′*, &c., which may be removed to increase the size of the charger, if desired. The charger R slides out and back in the guides *g*, the latter being attached to the hopper Q.

O, O′, and O² are three hydraulic cylinders attached to the beam B, in which work rams which carry the plungers *b b′ b²*, &c. They are all three double-acting—that is, are forced both up and down rapidly by water working alternately through the supply-pipes, of which there are two to each ram. The cylinder O is supplied with water through the pipes *l* and *h*. O′ is supplied by pipes, *m* to work the ram *f f*, &c., down, and *t* to raise all the rams *f f*, &c., in O′ up, the water from *t* going into the cylinder H, working the ram J, which carries the cross-head *k*, lift-rods *s s*, &c., and plate G, the latter raising all the rams *f f*, &c., simultaneously.

4 in Fig. 1 is a cylinder in the beam C, which contains another cylinder, 7, bolted thereto. The ram D in 4 forces the platen M up, and the ram F in 7 forces it down. They are supplied with water alternately through the pipes *n* and *o*.

Fig. 3 shows another way of combining these cylinders with the supporting-beam, C′ being the main beam, of cast iron, 4′ and 7′ the cylinders, D′ and 6 the ram, the ram 6 being connected with the platen M′ by the tie-rods 5.

The beam C is much less expensive this way, and the cylinder 4′ much stronger than if made as in Fig. 1. When the beam is made as shown in Fig. 3, I usually make the cylinder 4′ of steel. The platen M carries the plungers *c c c*, &c., up and down.

The combined section of the rams *f f f*, &c., in the cylinder O′ is made about equal to the section of the ram D, and then the pipes *n* and *m* are all supplied with water from one pipe, *q*, so that the plungers *c* move up against the bottom of the cakes in the dies 2 2 2, &c., at the same time that the rams *f f*, &c., force the plungers *b′ b′ b′*, &c., down on the top of the cakes. The section of the rams *f f f*, &c., may be made sufficiently larger than that of the ram D to compensate for the increased friction of their packings; then, the water from the pipes *n* and *m* having the same pressure, the cakes will be pressed alike on the top and bottom, bringing no strain on the disk A to move it up or down.

Pressing the cakes both up and down at the same time leaves them much more dense than if pressed hard one way, as the friction of the sides holds them so firmly when under pressure that they will not be dense far from the end, the cake of peat sticking firmly to the sides of the die, and the end of the cake from the die being relieved of the pressure to the extent of the friction.

By means of the separate rams *f f f*, &c., carrying the plungers *b′ b′ b′*, &c., the rams *f f*, &c., being of uniform size and supplied with water from the same pipe, or with water of equal pressure, all the plungers *b′ b′ b′*, &c., move each with the same force whatever

be the amount of peat in the dies 2 2 2, &c., while if the plungers b' b' b', &c., were all set in one platen, as those c c c, &c., are, then the thickest blocks of peat would get the most pressure, and often sufficient to break the press, while now the press can in no way be injured, as the pressure on each cake will be directly as the pressure on the safety-valve.

The ram in the cylinder O^2 is worked both ways by means of water forced in alternately through the pipes h' and l', (see Fig. 2,) and to this ram are attached the plungers b^2 b^2 b^2, &c., which move up and down with it. The plungers b^2 have around them an oiled sponge supplied with oil-cups 9 9, as shown in Fig. 4. The bottom of the plungers b' and b^2 are made flat or concave, as shown in the drawings, Figs. 1 and 4. When made concave the peat cakes or blocks are less likely to have the corners chipped off in transportation.

The disk A is revolved on its axis a by means of the hydraulic press V, piston-rod or ram x, rack w, attached thereto, pinion v, movable on its axis and moved by the rack w, wheel y, attached to v, pawl-wheel z and its pawl 15, (the pawl-wheel z being keyed to its axis,) the axis of wheels z and y and wheel u keyed thereto. The press V, being supplied with water alternately through the pipes g and 16, works the rack w up and down. When it is moving one direction the pawl 15, attached to z, does not catch and the wheels z and u do not turn, and when it moves in the opposite direction the pawl 15 catches in wheel y and turns the wheel n and disk A.

11 is a pin worked by press 10 into a notch in the disk A to prevent its being turned except at the proper time, and so arranged with the other parts of the pump that it will only work or move out when all the plungers b b' b^2 c, &c., are withdrawn from the disk A. This is done by supplying water through the pipes 12 and 13 at the proper time, so that it shall only be out of the notch or hole in A when the disk A should be revolved.

The full operation of the press is as follows: Dry fine peat is placed in the hopper Q and falls down into the charger R into the holes d d, &c. R is then forced under the plungers b b b, &c., by the ram 3, when all the plungers, b b' b^2, &c., are forced down upon the peat by their respective rams, those in O forcing b b, &c., down, they acting to force the peat out of the holes d d, &c., in the charger R into the holes or dies 2 2 2, &c., in L, while the plungers b' b' b', &c., and plungers c c c, &c., moving toward each other, compress very hard the peat, which has just previously been forced into the dies by b b b, &c. At the same time the plungers b^2 b^2 b^2, &c., press out the cakes of peat previously compressed and oil the dies 2 2 2, &c., by the sponges 8 8, &c. The rams O, O′, O^2, and 4 then move in an opposite direction, carrying the plungers b b' b^2 c, &c., out of the disks L, L′, and L^2, or out of all the dies 2 2 2, &c., after which the pin 11 is removed by the press 10, or its equivalent, and the disk A revolved one-third of the way round by means of the press V and its intervening parts, as before described, or their equivalents. The charger R is moved out and back while the disk A is being revolved, and the pin 11 being again put in its place by means of the press 10, or its equivalent, when the rams all repeat their operations, as before, the packing, compressing, and discharging being done simultaneously in the dies 2 2, &c., in the disks L, L′, and L^2 by the plungers b b' b^2 c, &c., as before described.

The oiling of the dies 2 2, &c., causes a great saving of power, wear and tear of dies, and better pressing of the peat, while it also saves the blocks of peat from being cracked in being forced out of the dies 2 2 2, &c.

The hopper Q may, if desired, be placed around the platen M. The charger R then becomes stationary, and the press is somewhat simplified. Should this be done, a rotating stirrer would need to be placed in the hopper under the platen, to rotate each time after the platen M is raised to secure the filling of the holes d d, &c.

There should be a thin movable piece under the charger R, arranged to work in connection with it, so as to keep the peat from falling out except at the proper time.

In pressing bricks, when it is desirable and necessary to have them all of the same size, the press O′ should contain the multiple rams f f, &c., instead of their being in O′, as here shown, so that each of the dies 2 2, &c., would contain clay of the same density. The dies then all being full of clay of uniform density, by reason of the uniform pressure put upon it, would then all have the clay equally hard pressed in them without the necessity of the multiple rams at O′.

A single press, O′, may be arranged with multiple rams, either with or without the press 4 below it, working the pressing up in an opposite direction, as here shown; but of course it would work much more slowly than one made as here shown aided by the presses O and O^2.

Having thus described my invention, what I here claim, and desire to secure by Letters Patent, is—

1. The construction and use of the rotating disk A, in combination with the dies 2 2 2, &c., and presses O′ and C, as and for the purposes herein specified and set forth.

2. The combination and arrangement of the disk A, dies 2 2 2, &c., with two or more presses, O and O′, as and for the purposes herein specified and set forth.

3. The arrangement of the rotating disk A, dies 2 2, &c., in combination with the three presses O, O′, and O^2, or their equivalents, as and for the purposes herein described and set forth.

4. The combination and use of the presses O′ and 4, or their equivalents, as and for the purposes herein described.

5. The construction and use of the compound press O′, essentially as and for the purposes herein described and set forth.

6. The construction and use of the beam C′, in combination with the cylinder 4′, as and for the purposes herein described and set forth.

7. The construction and use of the plungers *b b′*, &c., with the concave ends, essentially as and for the purposes herein described and set forth.

8. The combination and arrangement of the plungers b^2, sponges 8, and oil-cups 9, as and for the purposes herein described and set forth.

9. Oiling the dies 2 2 2, &c., as and for the purposes herein described and set forth.

10. The combination and arrangement of the presses H and O′, as and for the purposes herein described and set forth.

11. The combination and arrangement of the hopper Q, charger R, and dies 2 2, &c., as and for the purposes herein specified and set forth.

12. The combination and arrangement of the disk A, wheels *u v y z*, and their axes, the pawl 15, rack W, and press V, essentially as and for the purposes herein described and set forth.

13. The combination of the press 10, pin 11, and disk A, essentially as and for the purposes herein described and set forth.

A. H. EMERY.

Witnesses:
A. C. HOBBS,
JOHN A. WIEDERSHEIM.