

T. G. WALKER.

Peat Machine.

No. 99,733.

Patented Feb. 8, 1870.

Fig. 1.

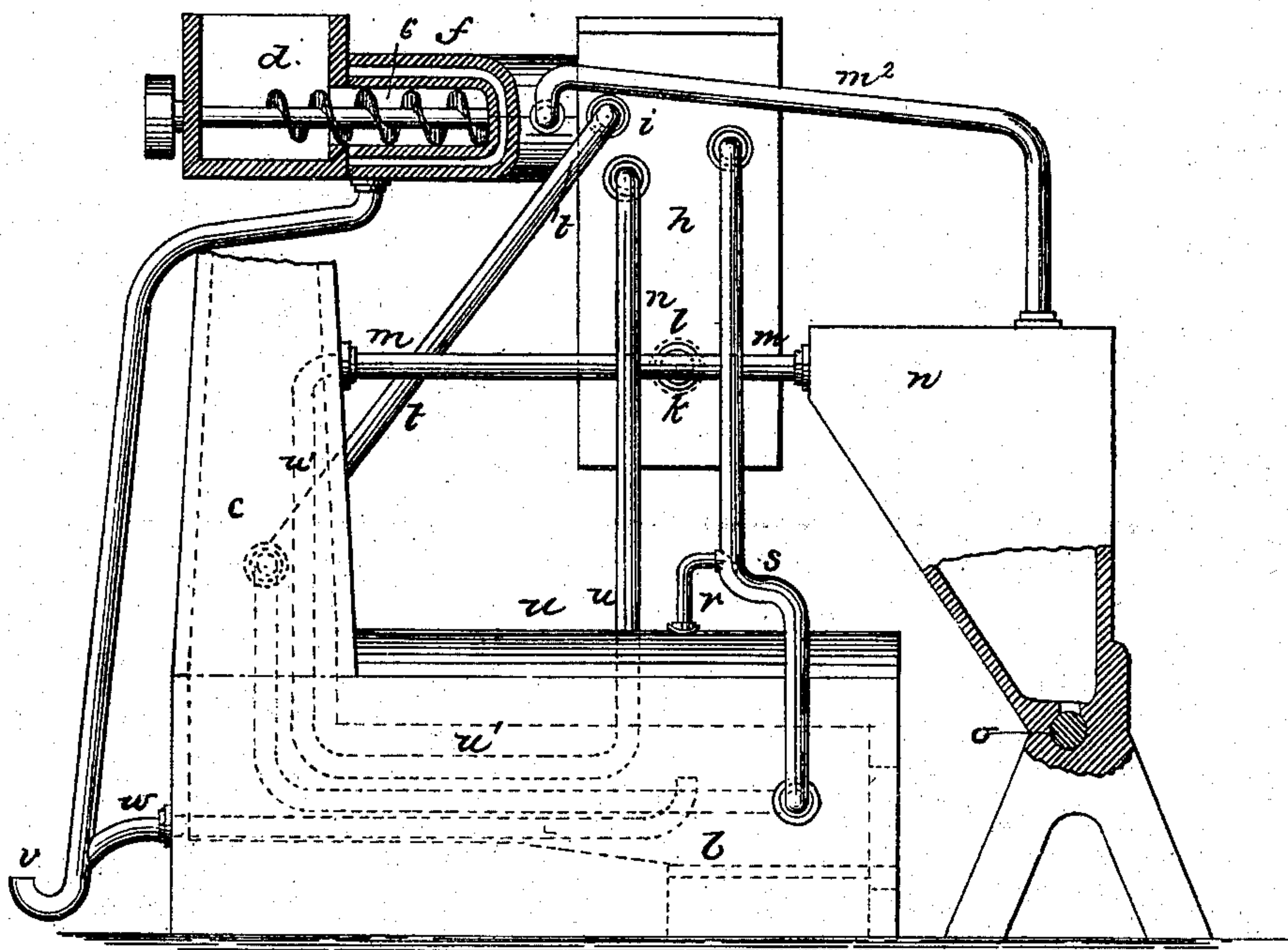
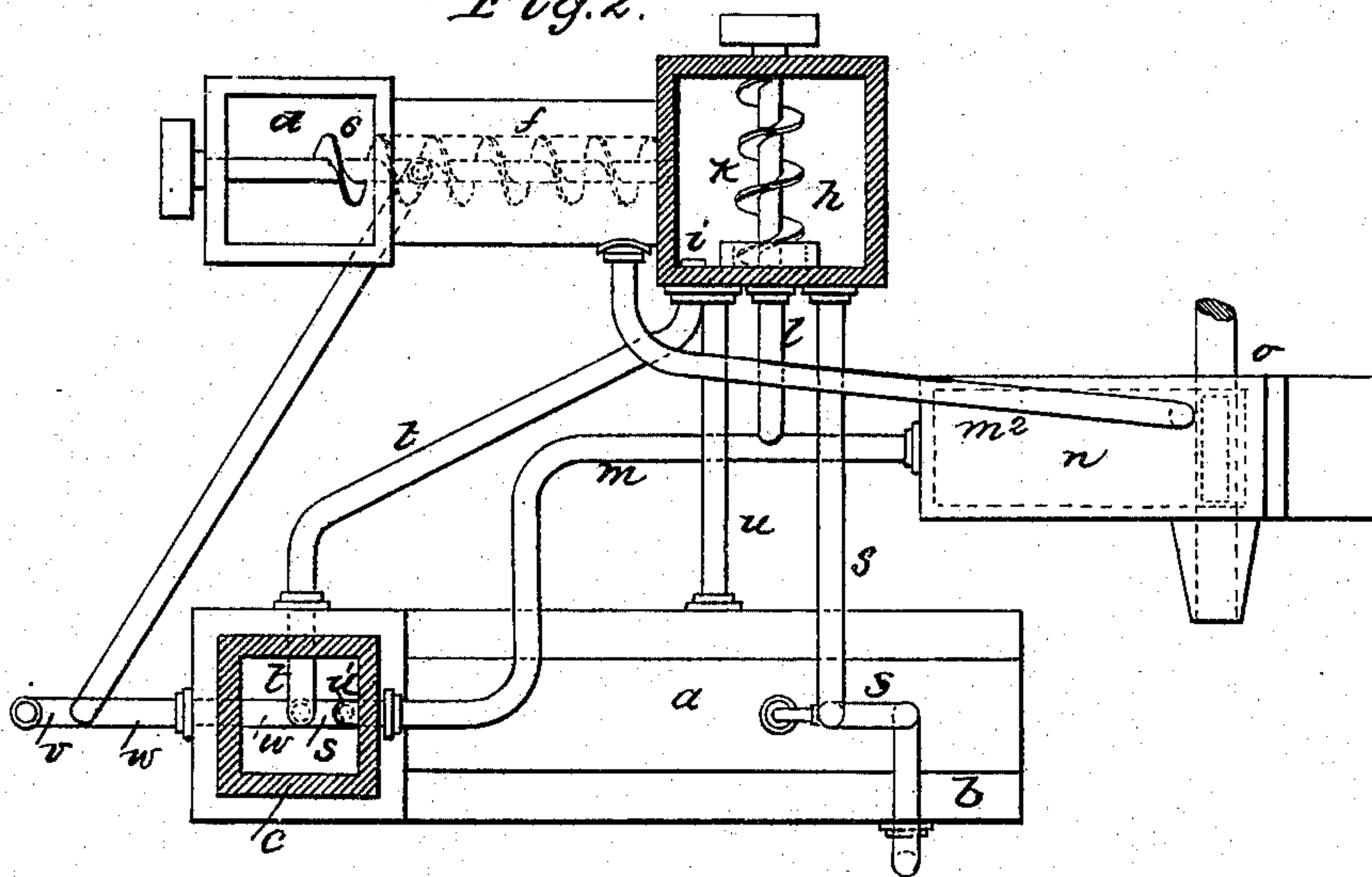


Fig. 2.



Witnesses  
Charles Smith  
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Inventor  
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# United States Patent Office.

THOMAS GEORGE WALKER, OF NEW YORK, N. Y.

Letters Patent No. 99,733, dated February 8, 1870.

## IMPROVEMENT IN EXPELLING VOLATILE MATTER FROM PEAT AND OTHER MATERIALS.

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, THOMAS GEORGE WALKER, of the city and State of New York, have invented and made a new and useful Improvement in Expelling Volatile Matter from Peat, Clay, and other Substances; and the following is declared to be a correct description thereof.

The object of this invention is to expel moisture from peat and other materials by a circulating current of steam, induced by a jet of steam from a boiler.

The current of steam is superheated and acts directly upon the material to expel the moisture; the vapors that pass off are employed in heating up the material as it passes into the apparatus, and the volatile gaseous matters are conveyed away to the fire of a furnace, and the watery portions are condensed.

By this constant circulation of vapors, a large amount of water or other volatile matter can be separated from peat and other materials with the loss of but little heat.

In the drawing—

Figure 1 is an elevation of the apparatus, portions, however, being in section to show the parts more clearly, and

Figure 2 is a general plan.

The steam-boiler *a* is heated by fire in a furnace, *b*, and *c* is the escape flue or chimney for volatile gases and products of combustion.

*d* is the hopper into which the peat or other material is supplied.

*f* is a cylinder containing a feeding screw, *g*, and surrounded with a steam jacket.

The screw *g* feeds the peat along gradually into the steaming-vat *h*, and a jet of steam issuing from the pipe *i* comes into contact with the material and, thoroughly warms the same as it falls into the chamber or vat *h*.

At the lower part of this vat a second screw, *k*, forces the peat out through a nozzle, *l*, into a superheated-steam pipe, *m*, or chamber, in which a rush of steam or current carries the said peat along into the drying or carbonizing chamber *n*, which also forms a delivery-hopper; the material being pressed out through a nozzle by a plunger, *o*, that is reciprocated by competent power.

I remark that the screws *g* and *k* are made with the blades that are necessary for forcing along the peat, and said screws are to be revolved with competent power.

The circulation of steam, vapors, and gases through the apparatus is maintained by a jet of steam from the boiler *a*, issuing at *r* into the pipe *s*, and drawing the steam and vapors out of the vat *h*, and forcing

them along through the superheating pipe or coil in the furnace *b*, to the pipe *t*, leading to the jet or nozzle *i*, that directs steam upon the mass of peat or other material as it is delivered by the screw *g*.

In this manner the vat *h* is kept highly heated, and a sufficient pressure is generated (the vat being closed) to compel a second circulation by the pipe *u*, extended as a superheating coil or pipe *u'* that is in the furnace *a*, and thence passes to the pipe *m* aforesaid.

The steam and vapors from the drying-chamber *n* pass by the pipe *m'* to the steam jacket around the cylinder *f* for the screw *g*, so that the cold material is thereby warmed, and the steam condensed so as to run away in the form of water to a trap, and overflow at *v*; while the gases and volatile matters evolved from the peat are passed into the furnace by the pipe *w* to aid in combustion, or they may pass into the chimney *c* and mingle with the products of combustion.

It is to be understood that the action of the confined steam, at a high temperature in consequence of being superheated, is to vaporize the water contained in the peat or other material, and also to liberate the gases and volatile matter from the mass. In this operation the vapors generated from the materials form a portion of the circulating current of steam to be superheated, so that there is but little steam required from the boiler, that steam producing the circulation.

When the superheated steam is sufficiently hot to carbonize the peat, the gases evolved will be inflammable, and by burning them in the furnace will evolve almost all the additional heat required for continuing the carbonization.

What I claim as my invention, is—

1. The circulating current of steam through superheating-pipes, in combination with the drying-chambers for subjecting peat or other material to the action of the superheated steam, substantially as specified.

2. The cylinder *f* and steam jacket, in combination with the drying-chamber and connecting-pipe, whereby the vapors from the drying-chamber are condensed and made to warm the material as it enters the apparatus, as set forth.

3. A current of superheated steam directed upon the material as it is passed in a layer or reduced form from one vessel into another, for depriving the same of moisture or carbonizing it, substantially as set forth.

Signed December 28, 1869.

THOS. GEO. WALKER.

Witnesses:

GEO. T. PINCKNEY,  
HAROLD SERRELL.