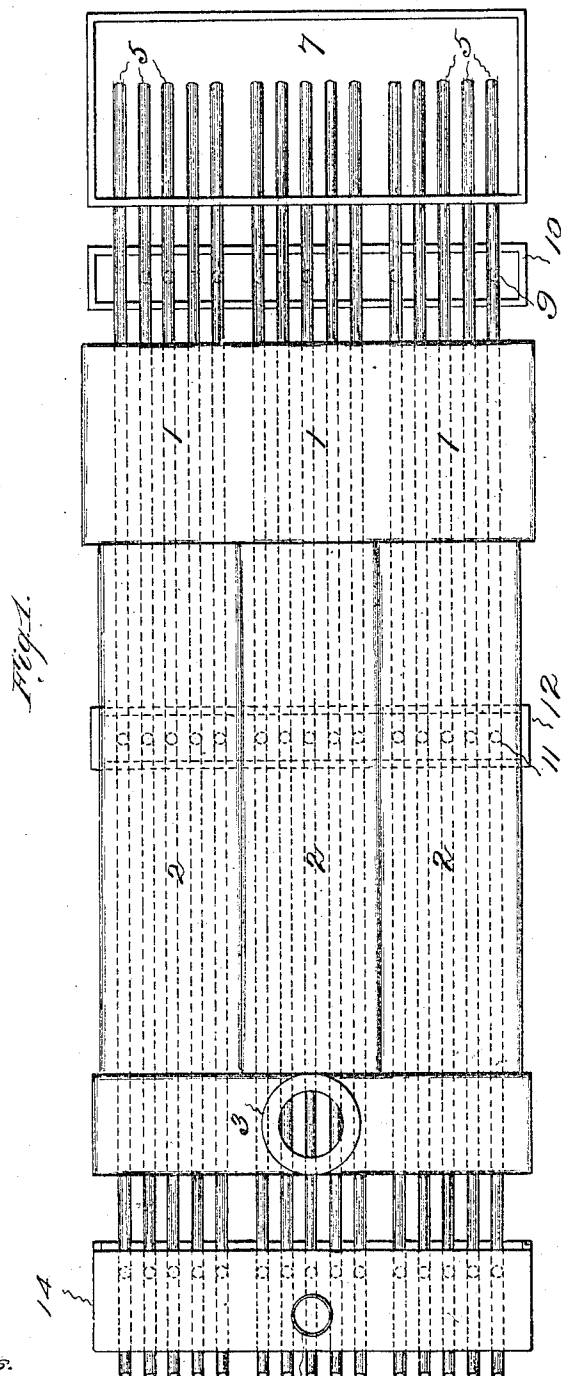


No. 852,090.

PATENTED APR. 30, 1907.

H. J. WICKHAM.
APPARATUS FOR CARBONIZING PEAT.
APPLICATION FILED JULY 5, 1906.

3 SHEETS—SHEET 1.



Witnesses.

C. H. Stone
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Inventor.

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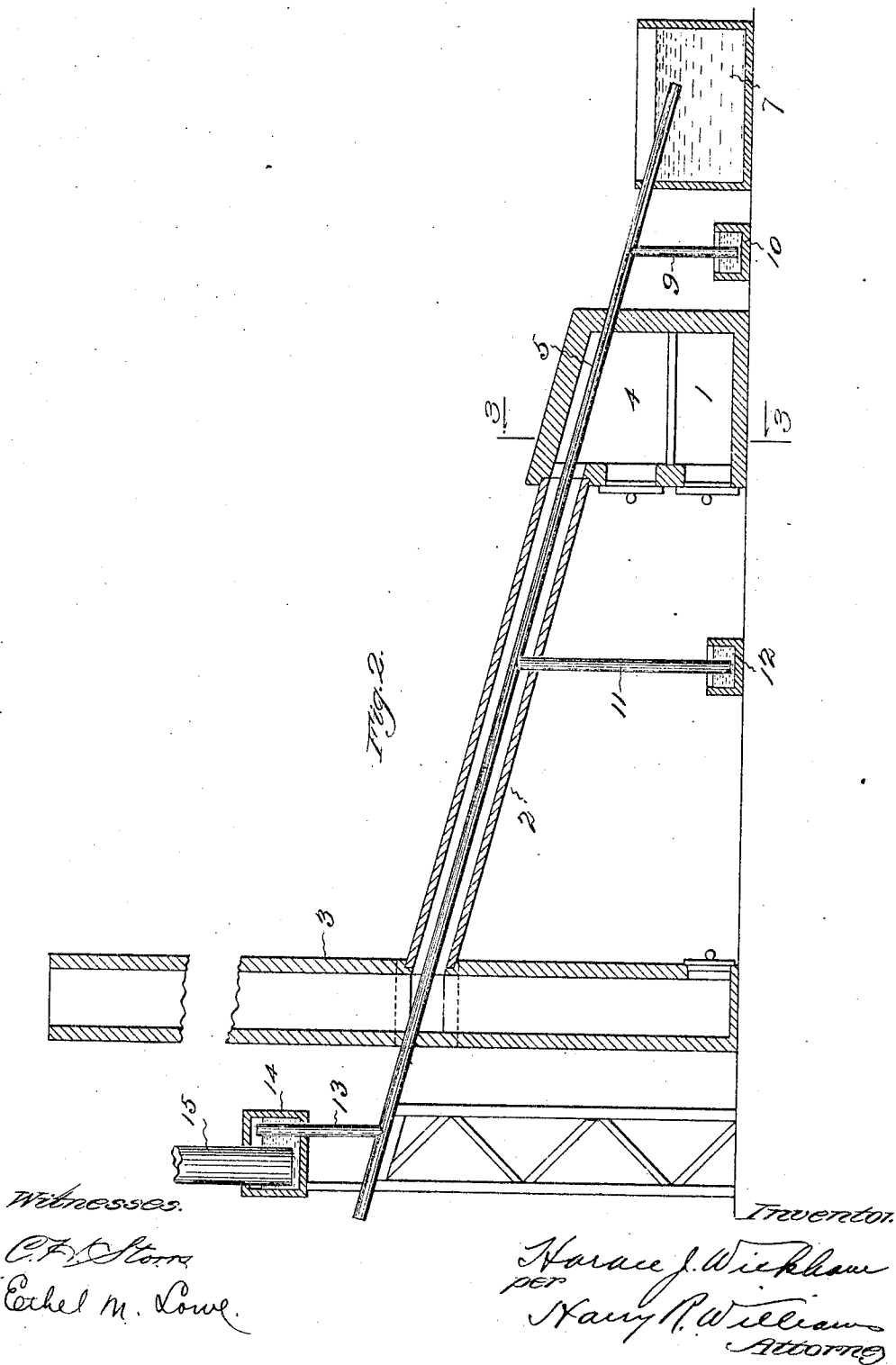
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Witnesses.

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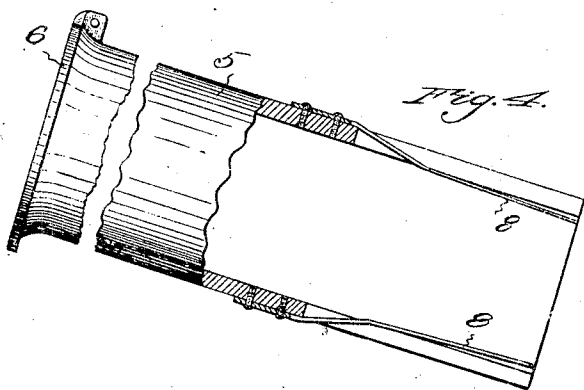
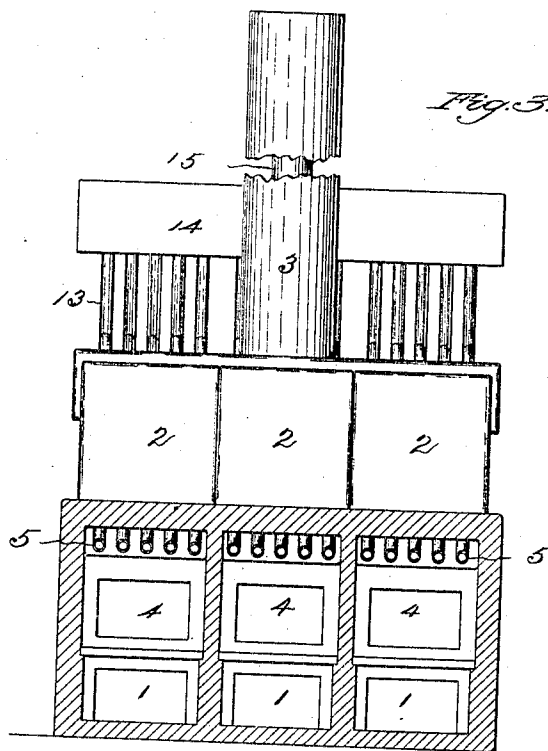
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3 SHEETS—SHEET 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

HORACE J. WICKHAM, OF MANCHESTER, CONNECTICUT.

APPARATUS FOR CARBONIZING PEAT.

No. 852,090.

Specification of Letters Patent.

Patented April 30, 1907.

Application filed July 5, 1906. Serial No. 324,742.

To all whom it may concern:

Be it known that I, HORACE J. WICKHAM, a citizen of the United States, residing at Manchester, in the county of Hartford and State of Connecticut, have invented a new and useful Apparatus for Carbonizing Peat, of which the following is a specification.

This invention relates to an apparatus for carbonizing blocks of peat.

The object of the invention is to provide a very simple and cheap apparatus which is easily operated and which will produce a uniform and desirable product and at the same time will preserve all of the by-products which result from the carbonizing process.

The apparatus shown as embodying the invention has several connected furnaces with a battery of tubes extending on an incline through the fire pot and smoke-flue of each furnace so as to be subjected to the heat of the fire, said tubes having openings at various places for collecting the liquid and gaseous by-products which escape from the blocks of peat that are fed in at the upper ends and are gradually advanced downwardly through the heated tubes until they emerge at the lower ends carbonized as desired.

Figure 1 of the drawings shows a plan of the apparatus. Fig. 2 shows a vertical longitudinal section. Fig. 3 shows a vertical transverse section; and Fig. 4 shows on larger scale, the ends of one of the tubes.

There may be any number of furnaces 1 and they are desirably built of brick or tile, although they may be built of other material. Each furnace preferably has an inclined flue 2 which leads to the stack 3 through which the products of combustion from the furnace escape. Extending on an incline of any suitable angle through the flue and above the fire-pot 4 of each furnace there may be one, but preferably there are more than one tube 5 of any suitable length. It is desirable that the flues be quite long so that the tubes will extend considerable distance therein. The furnaces may be made any desired size but preferably they are small and there may be any desired number of tubes extending through the flue and above the fire box of each furnace. It is preferred to build the furnaces as a single structure divided into compartments, as shown, and to arrange five tubes in each compartment.

The upper end of each tube may be flared and provided with a cover 6. (Fig. 4) The lower ends of the tubes are arranged to terminate below the level of water or other liquid in a tank 7. Spring fingers 8 (Fig. 4) may be arranged to restrict the openings at the lower ends of the tubes.

It is desirable to lead a drip pipe 9 from each tube below the furnace into a tank 10 containing liquid, for catching and holding any substances which may flow down the tubes from the peat being coked. It is also desirable to arrange a similar drip pipe 11 above the furnace and lead this pipe into a receptacle 12 containing liquid for collecting residuum. Above or below the end of the flue a pipe 13 may be led upwardly into a condensing chamber 14 from which an escape pipe 15 may lead. This chamber may or may not contain liquid as is desired.

After a fire is started in the furnace the pieces of peat, which are preferably tubular a few inches long and slightly smaller in diameter than the tubes are inserted by hand or by machinery one at a time in the upper ends of the several tubes and of course as the succeeding pieces are put in those in advance are pushed down the incline and subjected to a gradually increasing heat until they are directly over the fire where they are heated quite hot. Then they gradually cool as they are advanced until they are discharged about cold from the tubes into the tank. The liquid in the tanks seals the ends of the tubes and the residuum or by-product outlets so that oxygen cannot enter in sufficient quantities to cause complete combustion of the peat in the tubes.

As the tubes are inclined the tubular pieces of peat which nearly fill the tubes are easily pushed along as a new piece is inserted at the upper ends, in fact, if desired the tubes can be placed at such an angle that the pieces of peat will almost if not quite, slide down themselves under the influence of gravity. If the angle is such that the pieces tend to slide too freely the friction fingers at the lower ends of the tubes will prevent the pieces from dropping out without some pressure from behind. Any number of tubes may be used, but preferably there are such number that the operator may feed the peat blocks first to one, then to another, throughout the entire apparatus and by the time one is in each he returns to the first and repeats the

operation. This is repeated as long as the apparatus is in operation and the tubes are of such length that the advance of the pieces in this way is sufficiently slow to thoroughly heat and carbonize them before they reach the lower ends of the tubes. The flues are of such length that all the heat units possible are utilized for heating the pieces of peat, and the temperature of these pieces is raised very gradually in passing down through the smoke flue, and not raised so suddenly as to cause the peat to become brittle and crack and crumble.

The pieces of peat which are carbonized in this apparatus emerge from the tube solid and tough so that they will stand transportation without being broken up and will burn readily and freely in a fire.

With this apparatus all the by-products or residuum which exudes from the peat while it is being carbonized is collected and retained and utilized for such purposes as it is capable. Perfect control is had over the carbonizing by the time of feeding the pieces in at the upper ends of the tubes.

The invention claimed is:—

1. An apparatus for carbonizing peat having a furnace, a stack, a long flue inclining from the combustion chamber of the furnace to the stack, a fixed tube extending on an in-

cline through the furnace, flue and stack, and a liquid receptacle arranged to seal the lower end of the tube, substantially as specified.

2. An apparatus for carbonizing peat having a furnace with an extended flue, a tube extending on an incline through the furnace and the flue, and residuum outlets leading from the underside of the tube, substantially as specified.

3. An apparatus for carbonizing peat having a furnace, a stack, and an inclined flue extending from the furnace to the stack, an inclined tube extending through the furnace and the flue, residuum collectors communicating with the lower side of the tube, and a by-product collector communicating with the upper side of the tube, substantially as specified.

4. An apparatus for carbonizing peat having a furnace with an inclined flue, a number of fixed inclined tubes extending through the furnace and the flue and terminating in a liquid receptacle at the lower end, and residuum collectors connected with the tubes, substantially as specified.

HORACE J. WICKHAM.

Witnesses:

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ETHEL M. LOWE.