No. 878,480. PATENTED FEB. 4, 1908.

P. HOERING.

APPARATUS FOR MANUFACTURING FUEL.

APPLICATION FILED MAY 2, 1905.

Fig. 1

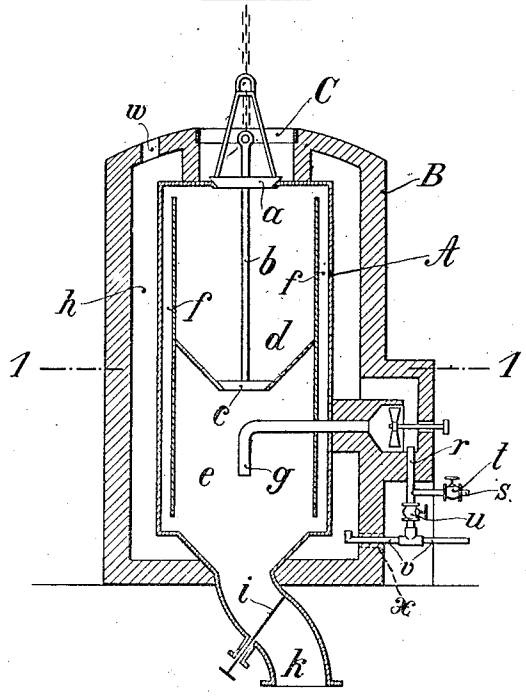
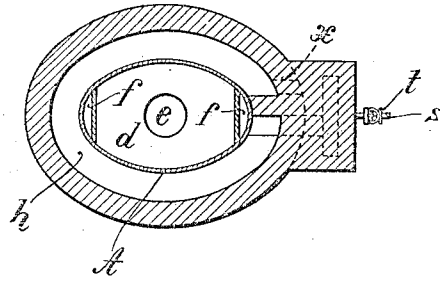


Fig. 2



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APPARATUS FOR MANUFACTURING FUEL.

No. 878,480. Specification of Letters Patent. Patented Feb. 4, 1908.

Original application filed December 22, 1903, Serial No. 186,178. Divided and this application filed May 2, 1905. Serial No. 258,474.

To all whom it may concern:

Be it known that I, PAUL HOERING, a subject of the King of Würtemberg, and a resident of Berlin, in the Kingdom of Prussia, in the German Empire, have invented a certain new and Improved Apparatus for Manufacturing Fuel, of which the following is a full, clear, and exact description.

My invention relates to improvements in the manufacture of coke from aqueous bituminous combustibles, such as peat, brown coal, river-mud, wood and the like, this application being a division of the application filed by me on the 22nd day of December, 1903, Serial Nr. 186,178, for an improvement in methods of and apparatus for coking hydrous bituminous combustibles.

For carrying out my invention I use continuously working ovens heated from the outside, in which the said combustibles are dried in the first place and ridded of the water contained in the same, by the action of heat and then by the further action of heat converted into coke. The steam generated during the drying is conducted with any gases formed by the drying, after the latter have eventually been superheated, into the hotter parts of the oven. The object of this is to make use of the heat contained in the steam or the gaseous admixtures and to bring about a chemical reaction upon the matters to be gasified, whereby the yield of tar and ammonia is considerably increased. The waste gases can be used for heating the oven from the outside.

The invention is illustrated in the annexed drawings.

Figure 1 shows a vertical section through my improved oven, and Fig. 2 is a transverse section on the line 1—1 of Fig. 1.

The furnace shown in Fig. 1 is fed through the shaft or aperture C when the closing plate *a* has been opened. Through the latter passes a movable rod *b* connected with a valve *c*. By means of this valve the chambers *d* and *e* of the furnace can be placed in communication with each other when desired.

The preliminary drying of the material to be coked takes place in the chamber *d* from which the material passes to the chamber *e* through the valve *c* which is opened at intervals. In the chamber *e* the extraction of gas and coking of the material takes place. The steam produced by the drying process in the chamber *d* is conducted downwards through chambers or conduits *f* to the chamber *e* where it is decomposed into water-gas which circulates in the coking zone and passes out through the conduit *g* together with the gases produced by the coking process. The removal of the gases from the chamber *e* is effected by means of an exhaust fan *g* or the like, which conveys the gases through the pipes *r* and *s* to other apparatus in which their heat is utilized, or condensation or other treatment of the gases takes place. In this case the valve or the slide *t*, arranged in the pipe *s*, is opened and the valve or slide *u*, arranged in the pipe *r*, is closed. But the valve *t* being closed and the valve *u* being opened the gas exhausted from the chamber *e* is conveyed through the pipe *r* to a pipe *v* through which it enters into the chamber *h* together with the heating gases generated in another plant. In this chamber *h* inclosed by the brickwork jacket B, the gases are burned and effect the external heating of the retort A. The products of combustion finally escape by an exit *w*. The air necessary for the combustion of the gases may enter through an air inlet *x* (preferably arranged near the pipe *v*.) It is evident that the heating of the retort A may be performed in any other suitable manner without departing from the spirit and scope of the invention. The removal of the material from the chamber *e* takes place through the curved conduit *k*, in which the inclined slide *i* is arranged. Instead of the chambers *f* or in combination with them, tubular conduits can be used, arranged outside the retort.

Fig. 2 is a cross section showing conduits *f* in plan view and the elliptical shape of the retort A, and the jacket B, which is preferred.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:—

1. An apparatus for coking aqueous bituminous combustibles, comprising a chamber for receiving the combustibles, means for withdrawing gases from the lower part of the chamber, means for conducting steam from the upper end of the chamber to the lower end thereof, and means for temporarily separating the upper part of the chamber from the lower part thereof.

2. An apparatus for coking aqueous bituminous combustibles, comprising a cham-

ber for receiving the combustibles, means for withdrawing gases from the lower part of the chamber, means for conducting steam from the upper end of the chamber to the lower end thereof, means for temporarily separating the upper part of the chamber from the lower part thereof, and means for evacuating the charge of this lower part.

In witness whereof I have hereunto signed my name this 15th day of April, 1905, in the presence of two subscribing witnesses.

PAUL HOERING.

Witnesses:
HENRY HASPER,
WOLDEMAR HAUPT.