

994,002.

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UNITED STATES PATENT OFFICE.

VALENTINE M. HYDE, OF DES MOINES, IOWA.

POWER PLANT AND CREMATORY.

994,002.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, VALENTINE M. HYDE, a citizen of the United States, residing at Des Moines, in the county of Polk and State of Iowa, have invented a new and useful Power Plant and Crematory, of which the following is a specification.

The object of this invention is to provide a system and apparatus for utilizing garbage, street sweepings, night soil and the like in generating heat.

A further object of this invention is to provide means for mixing coal, street sweepings, garbage and oil to provide a fuel for the generation of heat.

A further object of this invention is to provide an improved system and apparatus for heating water, generating steam and producing alcohol from garbage or other suitable substance.

My invention consists in the construction, arrangement and combination of elements hereinafter set forth, pointed out in my claims and illustrated by the accompanying drawing, in which—

Figure 1 is a side elevation, partly in section, illustrating my improved apparatus. Fig. 2 is a front elevation, partly in section, illustrating my improved apparatus and showing it also in connection with an engine and dynamo.

In the construction of the apparatus as shown the numeral 10 designates a furnace chamber provided with an endless grate 12 mounted for orbital travel toward the rear and also provided with an endless ash carrier 11 also arranged for orbital travel toward the rear and extending at its forward portion beneath the rear portion of the grate. Above and communicating with the grate 12 and through the front of the furnace chamber 10 is a conveyer 13 and said conveyer is constructed with a rotary distributor or feeding device 14 at its lower end adapted to discharge to said grate, and a funnel 15 at its upper end adapted to receive fuel from sources of supply hereinafter described. A garbage tank 16 is located above the furnace chamber 10 and at one side thereof (Fig. 2) and is provided with a door 17 in one of its sides and a chute 18 communicating with said tank coincident

with said door. It is the function of the door 17 and chute 18 to control and direct the discharge of garbage from the tank 16.

A chamber *d* is located above the furnace chamber 10 and in such relation thereto that heat radiated from said furnace chamber will raise the temperature of the upper chamber. The upper chamber *d* is provided with a hopper 19 on its top and opening to the interior thereof and said hopper is adapted to receive garbage from the chute 18. The upper chamber *d* also is provided with doors *d'*, *d''* in its forward end portion through which access may be had to the chamber for removal of waste matter or for other operations. A magazine 20 is mounted in front of the tank 16 and is provided with a discharge pipe 21 leading into the funnel 15. The magazine 20 is hopper-bottomed and is adapted to contain broken or comminuted coal or similar suitable fuel. An oil reservoir 22 is located in front of the magazine 20 and is provided with a pipe 23 extending into the funnel 15. The pipe 23 is provided with a cutoff valve *a* adapted to regulate and determine the discharge of oil from the reservoir to the funnel 15. A pipe *b'* leads from the forward end of the tank 16 to the funnel 15 and a pipe *c'* leads from the forward end of the tank *d* to said funnel and is adapted to convey substance such as alcohol from the tank to the funnel. A smoke flue 25 leads from the forward upper portion of the furnace chamber 10 through the tank *d* to any desired height and is provided with an opening in one side adapted to receive the initial spout of a fan chamber 24. A rotary fan 26 is mounted in the chamber 24 and a pipe 27 leads from the discharge opening or spout of said fan chamber to and enters the furnace chamber 10 beneath the grate 12. The lower end portion of the pipe 27 communicates with an elongated perforated distributing nozzle 27^a within the endless grate 12. A pulley 28 is mounted on one end portion of the shaft of the rotary fan 26 and may be driven by any prime mover (not shown). Doors 10^a, 10^b are provided in the front wall of the furnace chamber beneath the forward end of the grate through which access may be had to the interior of said chamber.

A steam boiler 30 is located in the furnace chamber 10 immediately below the tank *d* and a steam pipe 31, provided with a valve 32, leads from the upper portion of said boiler 30. Doors 30^a, 30^b are provided in the front wall of the furnace chamber whereby access may be had to the forward end of the boiler 30. The boiler 30 also is provided with a blow-out pipe 31^a in the lower portion of its rear wall, which pipe is controlled by a valve 32^a. A pipe *f* communicates with a source of steam supply and discharges into the lower portion of the blast pipe 27 and is adapted to supply live steam to the blast. The pipe *f* is provided with a valve. A steam motor 29 is provided and is adapted to receive steam through the pipe 31, which pipe is further controlled by a valve 33 adjacent said motor. A wheel 34 is connected with the steam motor or engine 29 and driven thereby and a dynamo 35 may be connected to and driven by said wheel through a belt 36.

The main shaft 37 of the dynamo preferably is tubular and is perforated to permit of the circulation of air through and about the dynamo and a pipe 38 leads from one end portion of the shaft, to which it is swiveled, to a source of compressed air not shown. The pipe 38 also is provided with a valve to control the passage of air to the tubular shaft of the dynamo. The pipe 38 preferably is supplied with artificially cooled fresh air and supplies the same to and into the vicinity of the dynamo. The cooled fresh air supplied to the dynamo provides several advantageous influences, such as lowering the temperature of the dynamo parts and thus permitting it to be run at a higher speed; and, second, providing purer air for breathing of persons employed in the vicinity of the dynamo.

In the practical use of this invention garbage is dumped into the tank 16 and is there hand sorted for various qualities. Part of the garbage is deposited in the forward end of the tank and discharges through the pipe *b'* to the funnel 15. Parts of the garbage are discharged through the door 17 and chute 18 to the hopper 19 and tank *d*, in which tank it is warmed and allowed to ferment to the end of producing alcohol or similar inflammable liquid which may be drawn off through the pipe *c'* to the funnel 15. A steam pipe *b* in the tank *d* and supplied from the boiler 30 will increase the temperature in the tank *d* to the end of causing fermentation therein and the procuring of alcohol or inflammable liquid. Fuel is drawn from the magazine 20 and oil from the reservoir 22 and are commingled with the garbage and alcohol or inflammable liquid in the conveyer 13 and conjunctively discharged to the grate 12. The mixed fuel is ignited on the grate 12 and supplies heat

for the generation of steam in the boiler 20, for the heating of water in such boiler, and for the heating of garbage in the tank *d*. The steam and hot water may be utilized in any desired manner and I have shown the motor engine 29 and dynamo 35 to illustrate one means of utilizing them.

I claim as my invention—

1. A power plant and crematory comprising a furnace chamber, a garbage tank, fuel magazine and oil reservoir contiguous thereto, feeding means common to and communicating with said garbage tank, fuel magazine and oil reservoir and discharging into the furnace chamber, a steam boiler in said furnace chamber, and a garbage reduction tank located above said boiler and adapted to be heated by radiation therefrom whereby fermentation is established for the production of liquid fuel.

2. A power plant and crematory comprising a furnace chamber, a garbage tank, fuel magazine and oil reservoir contiguous thereto, feeding means common to and communicating with said garbage tank, fuel magazine and oil reservoir and discharging into the furnace chamber, a steam boiler in said furnace chamber, a garbage reduction tank located above said steam boiler and adapted to be heated by radiation therefrom, whereby fermentation is established for the production of liquid fuel, a smoke flue leading from said furnace chamber, and a fan blast having its initial end opening into said smoke flue and its terminal communicating with the furnace chamber.

3. A power plant and crematory comprising a furnace chamber, a grate therein, a garbage tank, fuel magazine and oil reservoir contiguous thereto, feeding means common to and communicating with said garbage tank, fuel magazine and oil reservoir and discharging into the furnace chamber, a steam boiler in said furnace chamber, a garbage reduction tank located above said steam boiler and adapted to be heated by radiation therefrom, whereby fermentation is established for the production of liquid fuel, a smoke flue leading from said furnace chamber, and a fan blast having its initial end opening into said smoke flue and its terminal communicating with the furnace chamber.

4. A power plant and crematory, comprising a furnace chamber, a grate therein, a conveyer communicating with the furnace chamber above the grate, a feeding device in said conveyer adjacent the grate, a garbage tank, fuel magazine and oil reservoir contiguous to the furnace chamber, pipes communicating with said tank, magazine and reservoir respectively and discharging into said conveyer, a steam boiler in said furnace chamber, a garbage reduction tank located above said steam boiler and adapted

to be heated by radiation therefrom, a pipe leading from said reduction tank to said conveyer, a smoke flue leading from said furnace chamber, and a fan blast having its
5 initial end opening into said smoke flue and its terminal communicating with the furnace chamber.

10 5. A power plant and crematory comprising a furnace chamber having a grate, means for supplying fuel to said chamber, a boiler in said chamber above the grate, a reduction tank on said boiler, a garbage tank located in a plane above and at one side of the reduction tank and communicating therewith; a fuel magazine and an oil
15 reservoir located adjacent the garbage tank, and supply pipes leading from the garbage

tank, fuel magazine and oil reservoir to the fuel feeding means.

6. In a power plant and crematory, the 20 combination of a furnace, a steam boiler heated thereby, a garbage reducing tank heated by said boiler, a garbage supply tank communicating with the garbage reducing tank, a fuel magazine, an oil reservoir, feed- 25 ing means leading from the garbage tanks, fuel magazine and oil reservoir and discharging conjunctively into the furnace, and blast mechanism communicating with the furnace.

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