June 3, 1930. H. M. DAY 1,761,878

FURNACE FOR BURNING GARBAGE AND OTHER REFUSE

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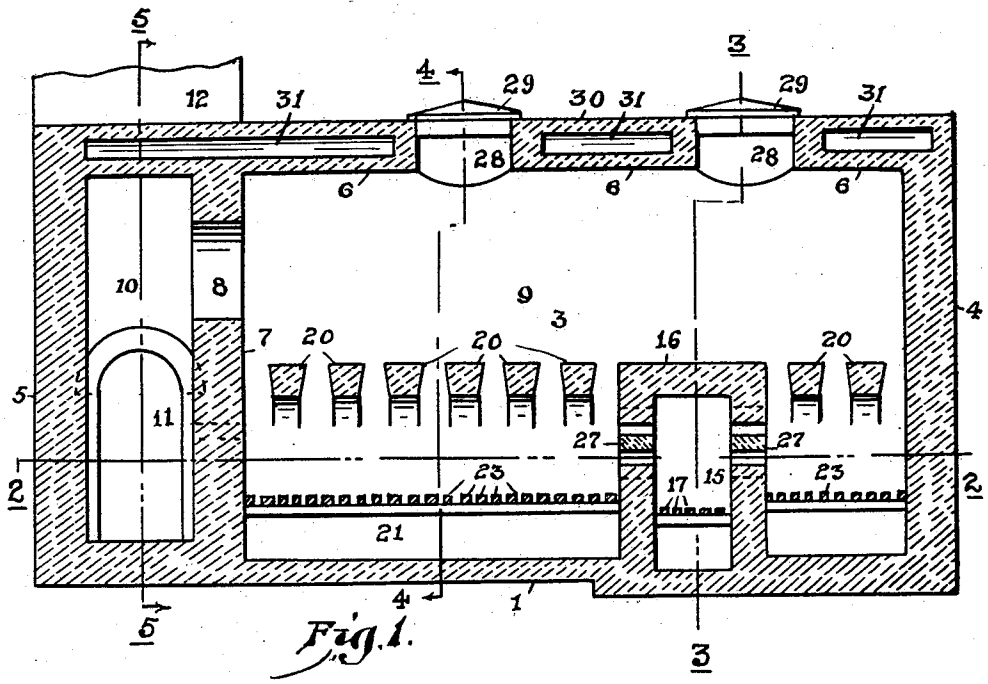

Fig. 1.

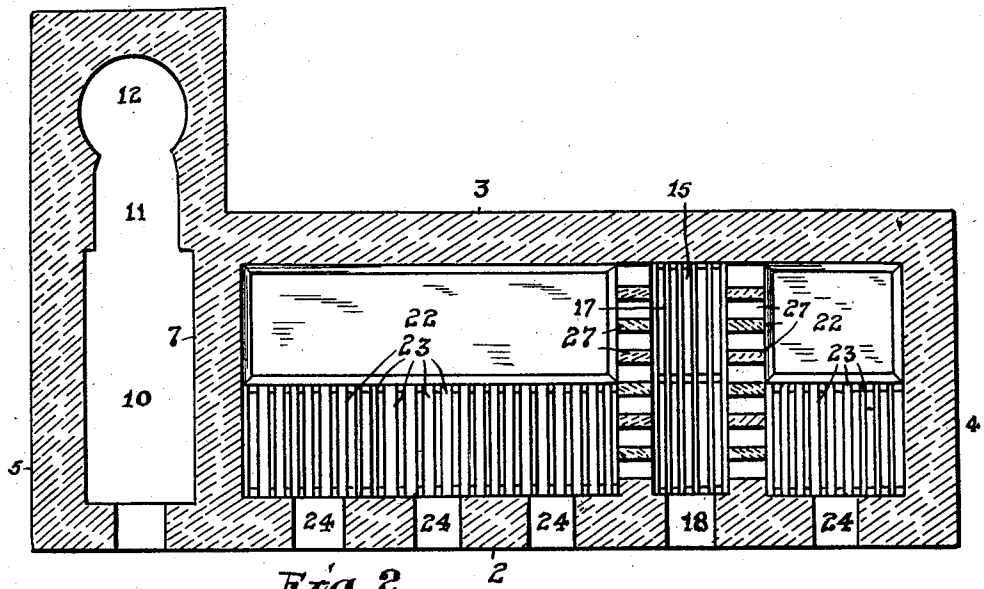

Fig. 2

INVENTOR

Herschel M. Day.

by Edward A. Laurence.

his attorney.

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Fig. 3

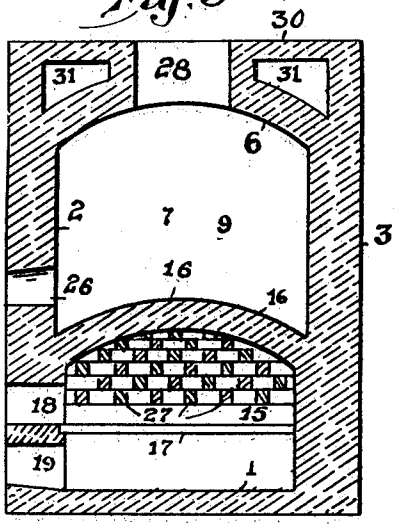


Fig. 4

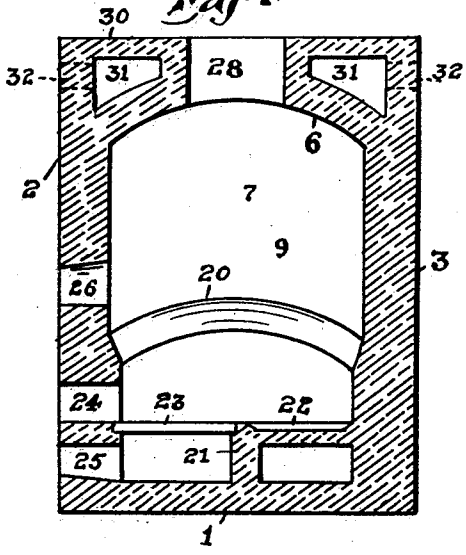
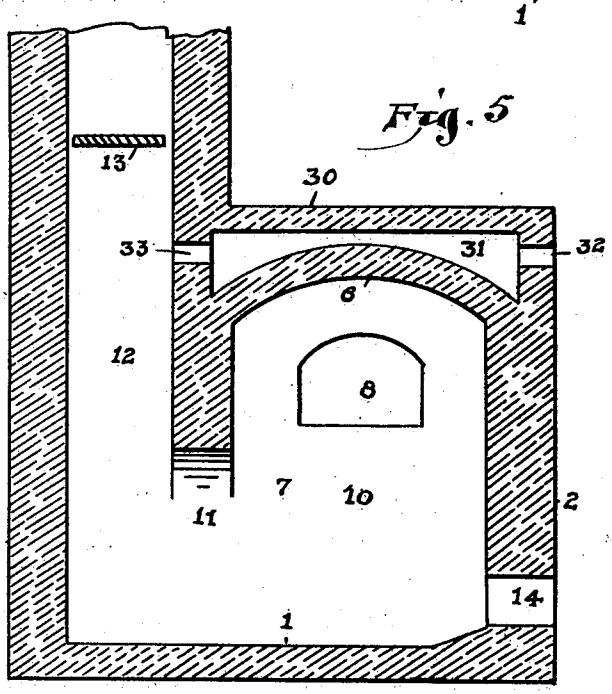


Fig. 5



INVENTOR
Herschel M. Day,
by Edward A. Lawrence
his attorney.

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UNITED STATES PATENT OFFICE

HERSCHEL M. DAY, OF CANNONSBURG, PENNSYLVANIA

FURNACE FOR BURNING GARBAGE AND OTHER REFUSE

Application filed May 15, 1928. Serial No. 277,844.

The object which I have in view is the provision of a new and improved furnace which will consume garbage and other refuse with greater thoroughness, expediency and convenience, and which is of durable yet inexpensive construction.

In the accompanying drawings, wherein I have illustrated a practical embodiment of the principles of my invention, Fig. 1 is a longitudinal and vertical section of the furnace.

Fig. 2 is a horizontal section taken along the line 2—2, in Fig. 1.

Figs. 3, 4 and 5 are vertical sections taken along the lines 3—3, 4—4 and 5—5 in Fig. 1, respectively.

Referring to the drawings, the furnace is provided with a bottom floor 1; front side wall 2; rear side wall 3; front end wall 4 and rear end wall 5. 6 represents the transversely arched roof, adjacent to the rear end wall 5 is a cross-partition wall 7 which is provided with the port 8 through which the gaseous products escape from the main furnace chamber 9 of the combustion chambers 10 comprising the space between the partition 7 and the rear end wall 5.

The port 8 is in the upper portion of the partition wall 7 and the lower portion of the chamber 10 is provided with an arched opening 11 which leads into the lower end of the chimney 12.

The chimney 12 is provided with a damper 13 for regulating the draft.

The front side wall 2 is provided with a clean-out port 14 leading into the bottom of the chamber 10 for the withdrawal of ashes and other precipitates from the chamber.

15 represents the fire box which is erected in the main furnace chamber and is adjacent to the front end of the latter.

The fire box is preferably near to, but not at the front end of the furnace. The fire box extends for the full width of the furnace and its front and rear walls are formed by the side walls of the furnace.

The top 16 of the fire box, as best shown in Fig. 3 is closed and arched transversely of the furnace.

17 represents the horizontal grate bars of the fire box, extending transversely of the furnace. Above said grate bars the wall 2 of the furnace is provided with a doored opening 18 for the introduction of the fuel while below the grate bars said wall is provided with an ash door 19.

20 represents transversely disposed arches spanning the main furnace chamber from side wall to side wall and spaced apart substantially as shown in Fig. 1. The arches are preferably made of refractory brick or tile.

Where the fire box is spaced from the front end wall of the furnace such arches are provided at both sides of the fire box as shown.

The arches are on the same horizontal level as the roof of the fire box and preferably have the same arc of curvature.

A longitudinal base wall 21 extends upwardly from the floor of the furnace beneath the arches 20, said wall being preferably slightly nearer the rear side wall 3 than the front side wall 2.

22 represents a flat hearth or deck of refractory material supported at its rear by the wall 3 and at its front by the top of the base wall 21.

23 represents grate bars extending from the front of the base wall 21 to the side wall 2 beneath the arches 20.

The front wall 2 is provided with clean-cut openings 24 above the grate-bars 23 and ash-removal openings 25 beneath said bars.

The openings are provided with the usual removable closures.

Above the arches 20, the front wall 2 is provided with stoke-openings 26.

The side wall or walls of the fire box 15 above the grate bars are provided with suitable ports or openings for the passage of the products of fuel-combustion to the space or spaces under the arches 20. Thus said walls may be of checker work as shown at 27. The roof of the furnace is provided with suitable openings 28 above the arches 20 through which the garbage and the refuse is dumped on to the arches 20. The openings 28 are provided with removable lids or closures 29.

Above the arched roof 6 the furnace is provided with a flat top 30 leaving an air space

or chamber 31 between the top and roof, the openings 28 being walled through said chamber, as shown in Fig. 1.

The side walls 2 and 3 are provided with ports 32 leading into said chamber 31 from outside atmosphere, and a port 33 connects said chamber 31 with the chimney 12, thus providing for currents of air passing through the chamber 31 for preserving the arched roof 6.

The garbage and other refuse is dumped through the opening 28 falling down upon the arches 20 where it is subjected from below to the products of the fuel-combustion in the fire box.

As it becomes dried and partially consumed it falls down between the arches 20, the dumped material falling upon or being pushed onto the hearth 22 for further drying.

The drier material is supported on the grate bars 23 until consumed. As the material on the hearth 22 becomes dried, it is raked forward on the grate bars 23.

Pokers or rakes may be inserted through the stoke openings 26 to distribute the mass of material on the arches 20 and, if necessary, open it up for the freer passage of the heat and flames.

The projection of the flames and burning gases from the fuel beneath the arches 20 and over the hearth 22 and the grate bars 23 provides for the utilization of the fuel heat values of the fuel.

The products of the combustion of the fuel and of the material to be consumed, pass into the combustion chamber 10 wherein they are consumed, the chimney carrying off the residuant gaseous water which is not offensive.

What I desire to claim is:—

1. In a furnace of the character described, the combination with a main furnace chamber, a combustion chamber and a chimney connected to the latter, of transversely disposed and spaced supports in said main chamber upon which the material to be consumed is placed, the communication between said chambers being above said supports, and a roofed over fire box located in said main chamber between the ends thereof and having communication with the latter below said supports, said fire box roof having its upper surface level with the tops of said supports to permit material to be moved from one end of the main chamber to the other over the fire box.

2. In a furnace of the character described, the combination with a main furnace chamber, a combustion chamber and a chimney connected to the latter, of a fire box located in the lower portion of the main chamber between the ends thereof and having a closed top and ported side walls, and transversely disposed and spaced supports in said main chamber in front of and behind the fire box on substantially the same level as the top of fire box, the material being deposited on said supports, the products of fuel combustion escaping through the side wall of the fire box to beneath said supports.

3. In a furnace of the character described, the combination with a main furnace chamber, a combustion chamber and a chimney connected to the latter, of a fire box having a closed top and located in the lower portion of the main chamber and close to but spaced from the front end of the latter, said fire box being below the communication between the rear end of the main chamber and the combustion chamber, and transversely disposed and spaced apart supports in the main chamber at either side of the fire box and at substantially the same level as the closed top of the latter, the material being placed on the supports, and the side walls of the fire box being provided with ports for the lateral escape of the products of fuel combustion to below the supports.

4. In a furnace of the character described, the combination of a main furnace chamber, a combustion chamber and a chimney connected to the latter, of a fire box having a closed top and ported side walls and located in the main chamber between the ends thereof and below the level of the communication between the said chambers, transversely disposed and spaced apart supports in the main chamber on substantially the level of the top of the fire box and in front of and behind said fire box, the material being placed on said supports, the products of fuel combustion escaping from the fire box to beneath said supports, and a hearth below the supports.

5. In a furnace of the character described, the combination of a main furnace chamber, a combustion chamber and a chimney connected to the latter, of a fire box having a closed top and ported side walls, and located in the main chamber below the level of the communication between the said chamber transversely disposed and spaced apart supports in the main chamber in front of and behind the fire box and having their tops on substantially the level of the top of the fire box, the material being placed on said supports, the products of fuel combustion escaping from the fire box to beneath said supports, and grate bars below the supports.

6. In a furnace of the character described, the combination of a main furnace chamber, a combustion chamber and a chimney connected to the latter, of a fire box having a closed top and ported side walls and located in the main chamber below the level of the communication between said chamber, transversely disposed and spaced apart supports in the main chamber on substantially the level of the top of the fire box, the material being

placed on said supports, the products of fuel combustion escaping from the fire box to beneath said supports, and a hearth underneath the rear portion of said supports and grate bars adjacent to and on the side of said hearth.

In testimony whereof I affix my signature.

HERSCHEL M. DAY.