No. 895,129. PATENTED AUG. 4, 1908.

W. H. VAN DOREN.

GARBAGE INCINERATOR.

APPLICATION FILED SEPT. 17, 1906.

Fig. 3.

Fig. 1

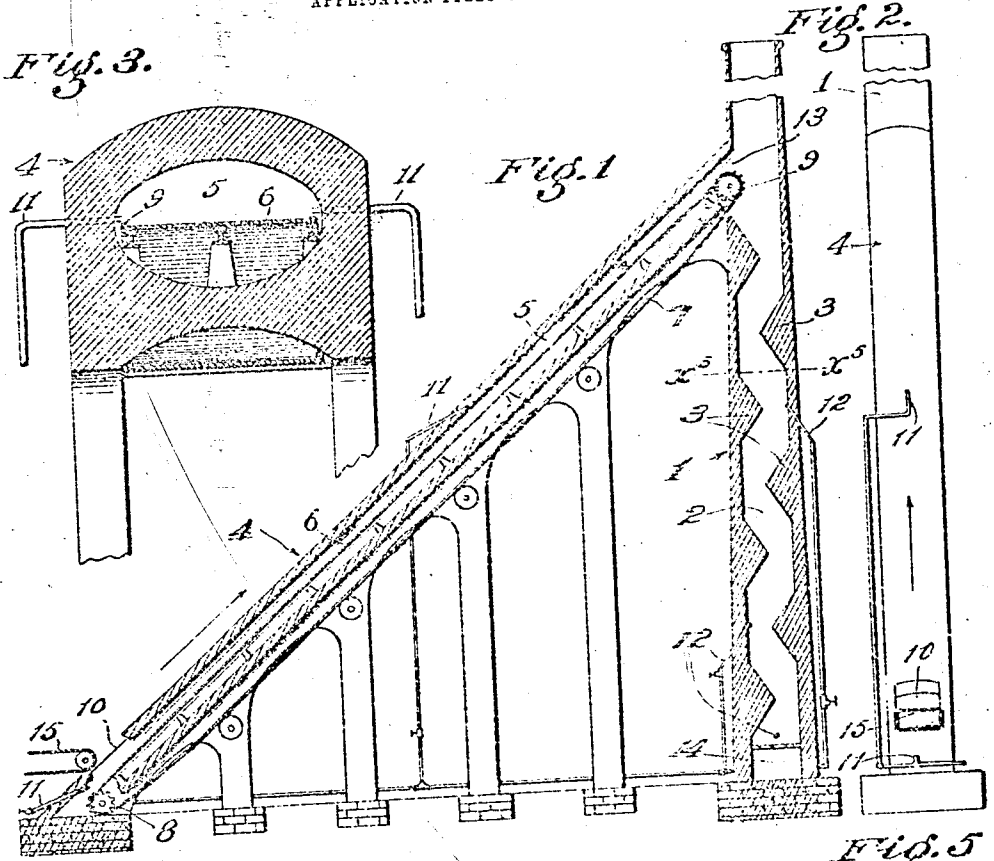


Fig. 2.

Fig. 4.

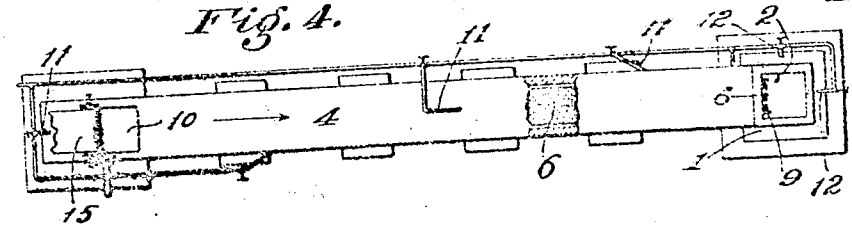
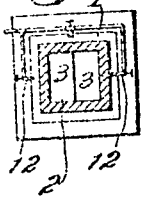


Fig. 5



Witnesses
E. E. Holly
J. Townsend.

Inventor
Wm. H. Van Doren
by James R. Townsend
his atty

UNITED STATES PATENT OFFICE.

WILLIAM H. VAN DOREN, OF LOS ANGELES, CALIFORNIA.

GARBAGE-INCINERATOR.

No. 895,129. Specification of Letters Patent. Patented Aug. 4, 1908.

Application filed September 17, 1906. Serial No. 335,014.

To all whom it may concern:

Be it known that I, WILLIAM H. VAN DOREN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Garbage-Incinerator, of which the following is a specification.

This invention relates to means for disposing of garbage and the like by burning the same.

It is of the objects of this invention to provide ready means for rapidly drying and burning garbage in an economical and effective manner; to provide a comparatively cheap plant for accomplishing the above object; to consume the gases and effluvia and reduce the garbage to ashes in great quantities and with great rapidity.

This invention is pioneer in that means are provided whereby the garbage is put into motion along an upwardly inclined chamber immediately it enters the incinerator, and at the same time is subjected to the fire from oil or gas burners, and the ascending motion of the garbage and the application of the fire and the motion of the garbage is made continuous throughout the apparatus from the time the material enters the incinerator until all the combustible material, except the liquids that may flow away, is consumed. Instead of first drying the material in an inclined way and then delivering the same to a furnace, I begin the burning operation at once and cause the material to ascend as the combustion proceeds, whereby the material is subjected to the direct action of the fire and ascends along with the heat and the products of combustion for a considerable time to the top of the inclined way, thereby becoming incinerated to a great extent and thoroughly heated, after which the material is further acted upon by fire in a tortuous chimney.

Preferably the incinerator is composed of a stack, an inclined conveyer to discharge into the stack and formed of a slanting chamber or tunnel, and means to move the solid material upward to introduce the same into the stack, a fluid fuel burner at the base of the conveyer and a furnace at the base of the stack.

The accompanying drawings illustrate the invention:

Figure 1 is a sectional elevation of the incinerator. Fig. 2 is a view of the incinerator from the left of Fig. 1. Fig. 3 is a cross-section of the drying and burning chamber. Fig. 4 is a plan view broken to show a portion of the carrier. Fig. 5 is a section on line x^1, Fig. 1.

1 is a chimney or stack having a tortuous passage 2 extending from bottom to top, the same being formed between slanting shelves 3 staggered with relation to each other so that material falling down the chimney through said passage will be deflected from one to the other of the slanting shelves, thus separating the pieces of falling material and distributing them in falling sheets of greater or less thickness across the open space of the tortuous passage 2 at numerous points therealong.

4 is a drying and burning chamber in the form of a slanting tunnel which may be made of any suitable size; for instance, say, in the case illustrated by the drawings, seventy-five feet long with an interior bore 5 of oval shape two feet high by three feet four inches wide interior diameters, extending aslant from the level of the base of the chimney to a point at the top of the chimney, say ten feet more or less from the top and fifty feet from the base.

6 is an apron conveyer moved by a sprocket chain 7, and sprocket wheels 8, 9, the driving wheel 8 being located at the bottom of the slanting tunnel 4, and the other wheel 9 being located at the junction of said tunnel with the passage of the chimney, so that the conveyer is curved and surrounded by the tunnel, thereby making a conduit for the passage of heat from the combustion of fluid fuel around, over and in contact with the refuse carried up through the tunnel by the conveyer. The driving sprocket wheel 8 will be propelled by an engine, not shown, to carry the garbage upward in the direction of the arrow from the bottom to the top of said slanting chamber.

10 designates an opening in the tunnel through which the material to be incinerated may be dumped onto the conveyer 6 at the bottom of the tunnel 4. The conveyer may be formed of any suitable elements whereby the material deposited in the tunnel will be carried upward in said conduit.

11 designates fluid fuel burners arranged at various points in the drying and burning tunnel to apply fire to the material to be dried and burned. These burners may be applied in any suitable way and may be arranged to produce any desired heat in the drying and burning conduit, so that as the

material is carried up by the conveyer, it will be subject to the action of the fire and thereby dried and burned in whole or in part. These burners may be applied at any point from bottom to top of the slanting conduit.

A furnace is provided at the base of the stack. That is to say, below the inlet thereinto from the conveyer. As indicating said furnace, 12 designates fluid fuel burners for producing fire at the base of the stack and whenever desired in the chimney. These may be arranged at any desirable place from bottom to top of the chimney to fill the chimney with fire if necessary to incinerate the material dumped from the conduit into the chimney through the hole 13 at the top of the drying and burning tunnel 4.

14 designates an ash-pit at the bottom of the chimney.

In practical operation the conveyer will be driven continuously and the garbage or other material to be incinerated will be dumped on to the lower end of the apron and will thereby be carried upward along the chamber and dumped over into the chimney. The fire from the several oil burners attacks the moving mass, rapidly drying the same and burning the gases and effluvia which emanate from the garbage. As the garbage burns, the ashes are carried up by the apron and dumped along with the unburned material into the chimney down which it with the unburned material descends and finally reaches its resting place in the ash-pit.

The drying and burning chamber is preferably oval in cross-section in order to give most effective deflection and reverberation of the heat.

As the unburned material drops down the chimney, the fire in said chimney acts upon the same to consume it. The ashes may be removed from the ash-pit by any suitable means, and the garbage or other material to be incinerated may be fed into the inlet 10 by a conveyer 15 or any other means desired or convenient.

The return limb of the apron and its sprocket chains may be in the open air or in a draft-flue, as at 16, in order to prevent the same from becoming too highly heated.

It will thus be seen that by means of this invention the combustion of the garbage begins immediately after the same has entered the furnace, and the combustible gases begin to arise therefrom under the direct action of the fire, and at the same time any liquids may flow down the floor of the slanting chamber, and that as the garbage ascends it becomes more combustible owing to the escape of the moisture therefrom and the accumulation of heat therein, so that by making the ascending chamber of suitable length, the material may be largely consumed in the chamber, and the unconsumed garbage may be brought to the point of ignition before being discharged into the tortuous passage of the chimney.

I do not limit myself to the dimensions hereinbefore stated, but such stated dimensions will afford an incinerator of large capacity.

The burners 12 in the chimney are preferably arranged aslant, being directed upwardly to act upon the falling material to uphold the same more or less against descent, thereby thoroughly intermingling the fire blast from the burner with the combustible material in the chimney, so as to insure complete combustion before the material reaches the ashpit. Said burners may be arranged at intervals on opposite sides of the chimney, as shown in Fig. 1, in order to effect combustion.

What I claim is:—

1. An incinerator comprising a stack, an upwardly inclined conduit to open into the stack, an upwardly inclined conveyer in the conduit to discharge into the stack, a fluid fuel burner at the base of the conveyer, and a furnace at the base of the stack to complete the combustion of unburned combustibles thus discharged.

2. An incinerator comprising a stack, an upwardly inclined conduit opening into the stack, an upwardly inclined conveyer in the conduit to discharge into the stack, one or more fluid fuel burners to direct a fire blast along the conduit and a furnace to receive and consume combustibles that may be discharged into the stack.

In testimony whereof, I have hereunto set my hand at Los Angeles California this 5th day of September 1906.

WM. H. VAN DOREN.

In presence of—
JAMES R. TOWNSEND,
JULIA TOWNSEND.