

Aug. 27, 1963

A. YONNER
GARBAGE INCINERATORS
Filed Aug. 19, 1958

3,101,683

Fig. 1

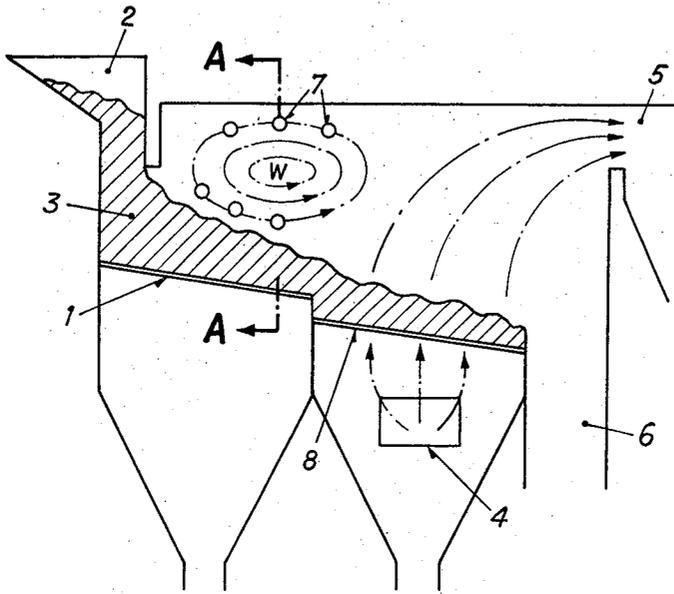


Fig. 2

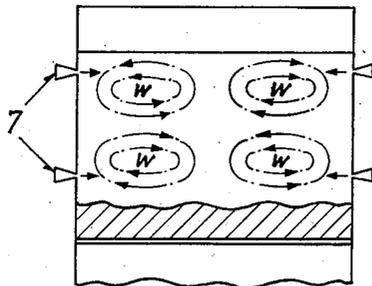
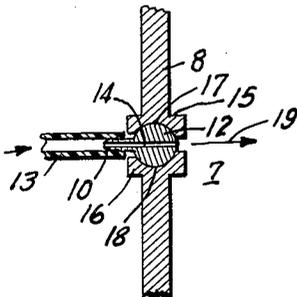


Fig. 3



INVENTOR.

André YONNER

BY

Leon M. Strauss
ATT.

1

3,101,683

GARBAGE INCINERATORS

André Yonner, Zollikon, Zurich, Switzerland, assignor to L. de Roll S.A., Zurich, Switzerland, a company of Switzerland

Filed Aug. 19, 1958, Ser. No. 756,031

Claims priority, application Switzerland Aug. 23, 1957

1 Claim. (Cl. 110-8)

Garbage, such as household refuse, to be processed in garbage incinerators contains a high percentage of water, so that the garbage is not readily combustible. The garbage incinerators commonly used today are provided with a predrying grate located before the actual incineration grate, both grates being accommodated in the same chamber. The garbage to be burnt is first dropped onto the predrying grate which is arranged preferably at an inclination, and is forwarded after the pre-drying process to the incineration grate which is positioned at a lower level and also preferably inclined like the predrying grate.

Experience gained with conventional incinerators over the past years has shown, however, that the aforesaid design has inherent disadvantages. Predrying is performed by the heat radiation from the redhot brickwork and by the combustion gases. The combustion air is blasted under the incineration grate. The combustion gases so produced escape from the incinerator through an aperture provided above the fire chamber. Practice has now shown that turbulences are produced above the predrying grate by the gases formed under the effect of the radiation upon the fresh, smouldering matter located on the predrying grate. Thus, there is a constant danger of deflagrations occurring in the drying garbage. Attempts have been made with various arrangements to prevent these turbulences, so far without success.

The most obvious idea would be to inject air in a direction opposed to that of the turbulence and so to destroy the turbulence and discharge the gases through the channel of the combustion gases. This method, however, requires a huge amount of air, while tests have shown the results to be poor. Again, it is not possible to blast air under the predrying grate because the matter lying on the predrying grate is very damp and therefore of low permeability to air. But even if the air did have access, this method would be impracticable as it would convert the predrying grate into an incineration grate.

The object of the present invention is to provide an arrangement overcoming the described disadvantages in a simple manner. This arrangement is characterized by the fact that the lateral incinerator walls above the predrying grate are provided with nozzles through which it is possible to inject air above and in a direction approximately perpendicular to the advancing garbage.

The object of this invention is further clarified by way of example in the accompanying drawing, in which

FIG. 1 is a diagrammatic representation of the predrying and incineration chamber of a garbage incinerator;

FIG. 2 is a sectional detail view taken along the line A-A in FIG. 1; and

FIG. 3 is a sectional view of details of the nozzles used in the invention.

Referring now to the drawing, the garbage 3 is forwarded through the channel 2 to the predrying grate 1 arranged at a slight inclination. Arranged beside the predrying grate 1 is the incineration grate 8 on to which the garbage 3 advances after having crossed the predrying grate 1. Combustion air is supplied to the incineration grate through the channel 4 in the direction indicated by the arrows. The fumes leave the incinerator through the channel 5. The so incinerated garbage passes from the incineration grate 8 into the residue pit 6, which need not be described here. A turbulence W, indicated in the

2

drawing by circles, is now produced above the pre-drying grate. The air flows in the direction indicated by the respective arrows.

FIG. 2 shows the position of the individual turbulences above the predrying grate. These turbulences may vary slightly but tests have proven that the individual turbulences are generally of the pattern shown in FIG. 2. Arranged in the lateral incinerator walls are nozzles 7 through which a gas such as combustion air is injected. These nozzles may be fixed or arranged so as to be adjustable and closable from outside, and they are preferably so distributed as to permit the whole chamber to be swept by the injected air. Pressures ranging from 20 to 100 millimeters of mercury are sufficient, and the volume of injected air need not exceed approximately 10 percent of the total amount of combustion air. Since incinerators of this type operate with an excess of air anyway, it matters not where the air volume exceeding the theoretical minimum is injected. Also, it is quite possible to couple the air supply through the nozzles 7 with the combustion air supply to the incineration grate.

Tests have proven that the described arrangement successfully prevents any dead space and resultant turbulence being formed by the gases from the smouldering matter, and thus eliminates the danger of deflagrations occurring above the predrying grate.

FIG. 3 shows one embodiment of the adjustable nozzles used in the invention. The wall of the chamber is enlarged as at 15 and 16 and the enlargements are provided with sockets 17 and 18 for seating a spherical valve member 12 which has a bore 14 through the center thereof. The portion of the sphere 12 directed toward the outside of the chamber is provided with a fitting 10 which is preferably threaded or fluted onto which an elastic pipe conduit 13 is fixed. When a source of air under pressure is connected to the conduit 13, the air will be directed into the chamber in the direction of the arrow 19. Of course, the direction of the inflowing air stream can be changed by swinging the sphere 12. A cut-off valve may be provided for the conduit 13 as desired.

Various changes and modifications may be made without departing from the spirit and scope of the present invention and it is intended that such obvious changes and modifications be embraced by the annexed claims.

Having thus described the invention, what is claimed as new and described to be secured by Letters Patent is:

A garbage incinerator comprising wall means defining a closed incinerator chamber with refuse inlet means at one end and gas discharge means at an opposite end, a predrying grate disposed at an inclination in said incinerator chamber adjacent said refuse inlet means for supporting refuse for drying thereon, the spaced adjacent said inlet and above said predrying grate having tendency to collect combustible gases, an incinerator grate disposed on the side of said predrying grate remote from said refuse inlet and slightly below said predrying grate a substantially the same downward inclination to permit gravity advance of refuse from said predrying grate to said incinerator grate, means for directing incinerating gases through said grate, and gas nozzle means above said predrying grate arranged to direct gases into said incinerator chamber in a direction and at a rate to prevent the formation of combustible gases above said predrying grate and to sweep the area above said grate free of such gases.

References Cited in the file of this patent

UNITED STATES PATENTS

1,239,403	Kidwell	Sept. 4, 1917
1,627,349	Snow	May 3, 1927
1,811,562	Reese	June 23, 1931
2,874,655	Wolfram	Feb. 24, 1959