United States Patent

Bowles

[15] **3,654,881**

[45] **Apr. 11, 1972**

[54] CYCLONE INCINERATOR

[72] Inventor: **Harry L. Bowles,** Houston, Tex. 77007

[22] Filed: **May 4, 1970**

[21] Appl. No.: **34,274**

[52] **U.S. Cl.** ..... **110/8 C,** 110/18 C

[51] **Int. Cl.** **F23g 5/12**

[58] **Field of Search** 110/7, 8, 13, 18

[56] **References Cited**

UNITED STATES PATENTS

3,215,501	11/1965	Phillips	110/8 X
3,548,760	12/1970	Yarnell	110/8
3,163,133	12/1964	Montgomery	110/18
2,592,491	4/1952	Toepel	110/8
3,543,702	12/1970	Appelhans	110/13

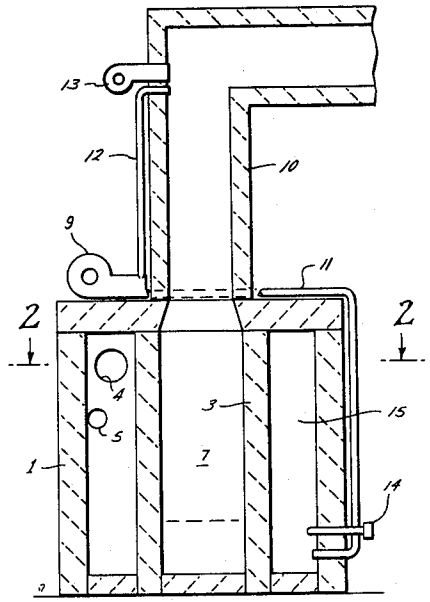
Primary Examiner—Kenneth W. Sprague

Attorney—Renseler O. Wyatt

[57] **ABSTRACT**

An incinerator for combustion of wastes fed from a cyclone waste deposit, having narrow chambers through which the flue stream passes, provided maximum scrubbing action and providing complete heat retention in the chambers to complete oxidation of particulate matter before the flue stream enters the stack for emission.

5 Claims, 3 Drawing Figures



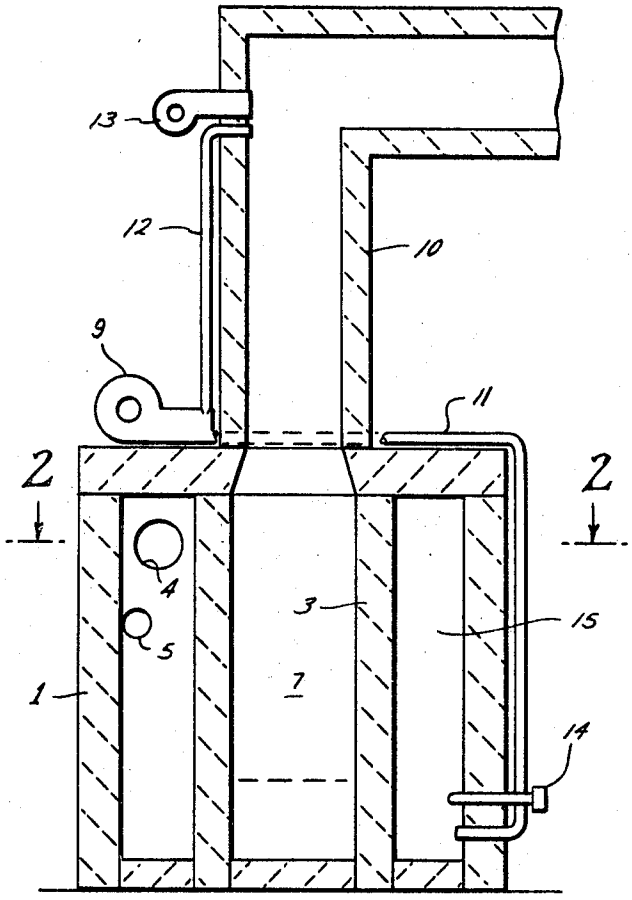


Fig. 1

Fig. 2

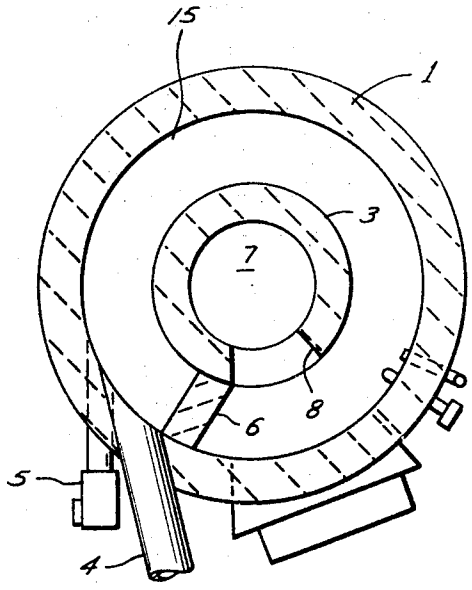
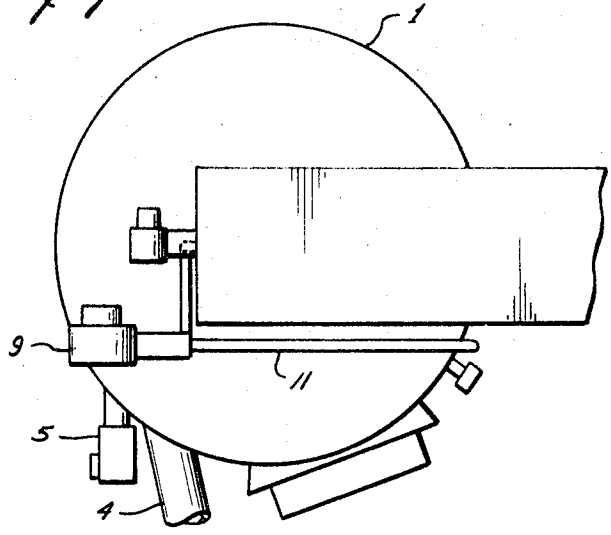


Fig. 3



Harry L. Bowles, Jr.
INVENTOR.

BY Ransela C. Wyatt
ATTORNEY

CYCLONE INCINERATOR

SUMMARY OF THE INVENTION

An incinerator having a cylindrical body with a plurality of chambers therein and a burner in said body and an air pump providing combustion air and impetus to the flue stream, and having means for maintaining maximum heat retention in said chambers as said flue stream passes therethrough.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side elevational view of the device, in cross section;

FIG. 2 is a top view, in cross section, taken on the line 2—2 of FIG. 1, and

FIG. 3 is a top view of the device.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the drawings, the numeral 1 designates a cylindrical housing of refractory material in which a cylindrical partition 3 is formed. A feed duct 4, leading from a waste reservoir, commonly referred to as a cyclone (not shown) enters the housing 1 tangentially and immediately adjacent the burner 5. The interior of the housing 1 has the vertical partition 6, which acts as a baffle guiding the flue stream into the axial secondary chamber 7 through the passageway 8.

A blower 9 is mounted on the housing 1 adjacent the breeching 10 leading from the chamber 8 to the stack (not shown). The blower 9 directs combustion air into the primary chamber in the housing 1, through the conduit 11, and into the breeching 10, through the conduit 12, and an additional burner 13 may be mounted in the breeching conduit, as an after burner, which will receive combustion air from the conduit 12. A thermocoupling 14 provides an automatic control of the burners 5 and 13.

Waste, such as type 5 of the Institute of Incinerators of America Classification, which consists of gaseous, liquids, or sludge, such as tar, paint, fumes, etc. that can be moved by air pumps into the housing, or type 6, which is by-products from industrial operations, which may be delivered to a cyclone reservoir (not shown), which will in turn deliver waste into the incinerator in an air stream, such as sawdust, shreaded paper, coffee grinds, etc., and which will enter tangentially and impinge the wall of the primary burning chamber. As the flow of waste and air contacts the flame from the burner 5, combustion takes place, and the resulting flue stream, with fly-ash and residual matter in suspension, will be directed against the walls of the narrow channel comprising the primary burning chamber 15, and the walls of the axial chamber 7, and the heat from the combustion will be retained, and a maximum degree of heat will be developed, causing complete oxidation of the waste material and causing continuous turbulance and spin off of the fly ash, and promoting a scrubbing action all of the way from the duct 4 to the breeching 10. Any residuary matter remaining in the flue stream upon its entrance into the breeching will be consumed by the burner 13, assisted by the combustion air supply from the conduit 12, prior to entrance of the flue stream into the stack, providing a smokeless, odorless discharge.

The clean out doors 15 provide means for removing fly ash that has settled to the floor of the chambers during the movement of the flue stream through the chambers 7 and 15.

What I claim is:

1. In an incinerator, a cylindrical housing of refractory material, a feed duct leading tangentially into said housing, a burner mounted in said housing adjacent said duct, a partition in said housing forming a narrow annular primary burning chamber and an axial secondary chamber, means for introducing waste and air into said burning chamber through said feed duct at a point adjacent the upper end of said primary burning chamber, said burner being mounted to discharge into said primary chamber in a direction substantially parallel to said duct, a baffle in said primary chamber disposed therein so that the combustion product produces a turbulent flue stream by transversing the annular primary chamber.

2. The device defined by claim 1 including means for introducing a secondary air supply into said flue stream.

3. The device defined by claim 1 including an after burner in said breeching conduit, and a secondary air supply supporting said after burner.

4. The device defined in claim 1 having means for building and retaining maximum heat in said chamber.

5. The device defined by claim 1 wherein a thermocoupling in said primary burning chamber controls the burner operation.

* * * * *