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(72) Inventor: **Beaumont, Stephen John**
Burslem
Stoke-on-Trent
Staffordshire ST6 2AH (GB)

(74) Representative: **Swindell & Pearson**
48 Friar Gate
Derby DE1 1GY (GB)

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(71) Applicant: **Drayton Beaumont Services Ltd**
Burslem
Stoke-on-Trent
Staffordshire ST6 2AH (GB)

(54) **Kiln**

(57) A kiln 10 for treating hazardous materials. The kiln 10 has an enclosure 16 which is moveable between respective loading areas 12 such that material at a respective area 12 can be fired. A rectangular channel 36

is provided in the floor around each of the loading areas 12 and can be filled with water. When the enclosure 16 closes a respective loading area 12, lower ends of the enclosure 16 locate in the channel 36 to form a seal.

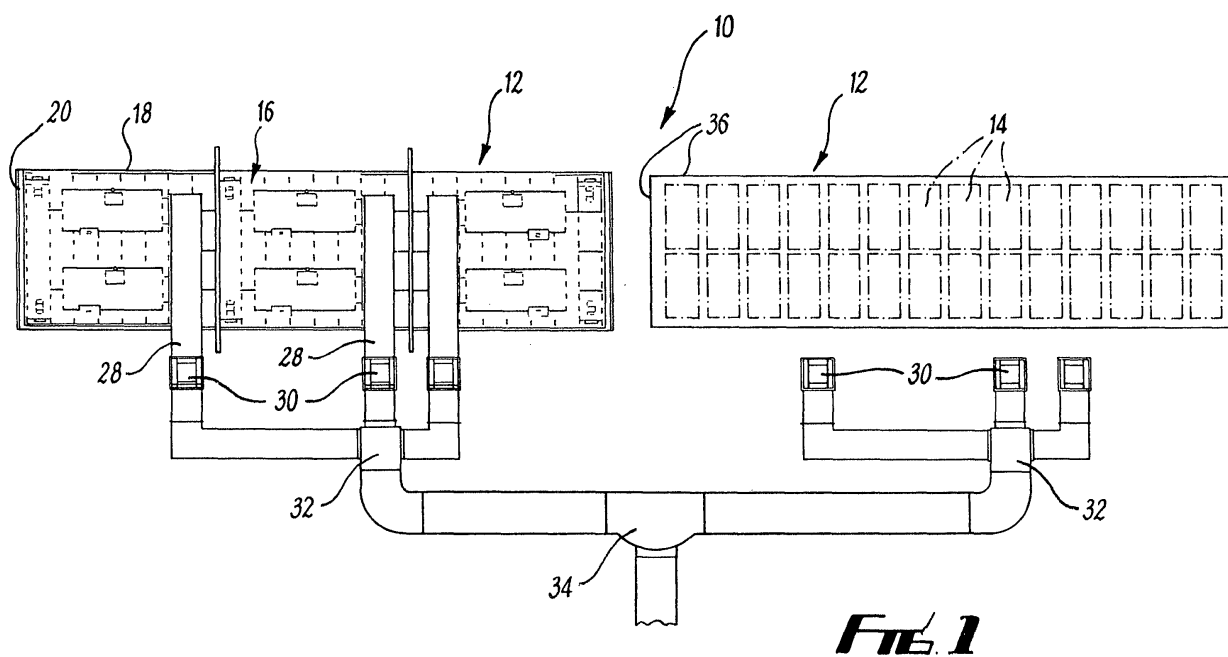


FIG 1

Description

[0001] This invention concerns improvements in or relating to kilns, and particularly but not exclusively kilns for treating hazardous substances.

[0002] When treating hazardous materials in kilns and furnaces, it is very important to ensure there is no leakage of the hazardous material from the kiln, whether air borne or otherwise.

[0003] According to the present invention there is provided a kiln, the kiln including two loading areas and an enclosure selectively movable between a first position enclosing a first of the loading areas, and a second position enclosing the second loading area, a respective channel being provided in the floor around each of the loading areas, which channel is fillable with a liquid, the kiln being arranged such that when the enclosure is in either of the first and second positions the lower edges of side walls of the enclosure locate in the respective channel such that when filled with liquid a liquid seal is formed thereat, firing means being provided within the enclosure to enable material at the loading areas to be fired when located within the enclosure thereat.

[0004] Doors are preferably provided at opposite ends of the enclosure which can wholly open so as to permit the enclosure to be moved from a loading area in the direction extending between the doors. When closed lower edges of the doors may locate in the respective channel.

[0005] Raising means may be provided for selectively raising the enclosure off the ground to permit movement thereof.

[0006] Water may be located in the respective channels.

[0007] The kiln may include exhaust means for exhausting gases from the enclosure during firing. An after burner arrangement may be provided to cause burning of gases passing through the exhaust means.

[0008] Respective exhaust means may be provided for each loading area, and the respective exhaust means may be interconnected.

[0009] A filter arrangement is preferably provided through which the exhaust gases pass prior to release to the atmosphere. The filter arrangement preferably includes a ceramic filter.

[0010] Receptacles for materials to be treated may be provided at, or movable to, the loading areas.

[0011] An embodiment of the present invention will now be described by way of example only and with reference to the accompanying drawings, in which:-

Fig. 1 is a diagrammatic plan view of a kiln according to the invention;

Fig. 2 is a diagrammatic side view of part of the kiln of Fig. 1;

Fig. 3 is a diagrammatic sectional end view of part

of the kiln of Fig. 1; and

Fig. 4 is a more detailed cross sectional end view through a further part of the kiln.

[0012] The drawings show a kiln 10 with two loading areas 12. Each loading area 12 includes a plurality of receptacles 14 for receiving material such as hazardous material, to be treated. An enclosure 16 is provided with side walls 18 and end doors 20. The doors 20 can fully open by upwards lifting.

[0013] A plurality of burners 22 are provided on each of the side walls 18. A plurality of hydraulic lifting arrangements 24 with ground engaging wheels 26 are provided along each of the side walls 18.

[0014] Ducting is provided above the enclosure 16, with three lengths of ducting 28 being selectively connectable to joints 30. Two sets of joints 30 are provided, one set for each loading area 12. Further ducting extends from the joints 30 to a first manifold 32. Ducting from the first manifold 32 for each loading area 12 connects to a further manifold 34. An after burner is provided in the further manifold 34 such that gases passing therethrough pass over or by an open flame burner, to ensure combustion of any combustible elements in the fumes. Ducting from the further manifold 34 leads to a filtration arrangement (not shown) which includes a ceramic filter to trap particles, prior to exhaustion to atmosphere.

[0015] A rectangular channel 36 is provided around each of the loading areas 12, and in use the channel 36 will be filled with water. The channel 36 is positioned such that when the enclosure 16 is over the respective loading area 12, the lower ends of the side walls 18 will locate in the sides of the channel 36, and the lower edges of the end doors 20 when closed will locate in the ends of the channel 36.

[0016] Fig. 4 shows the channel 36 in more detail being formed in a reinforced concrete floor 38. The floor of the loading area 12 is shown with two reinforcing layers 40, 42 on which refractory tiles 44 are laid with a peripheral surround of dense refractory brickwork 46 on top of three layers of insulation refractory brickwork 48.

[0017] In use, the receptacles 14 in a one of the loading areas 12 are loaded with material to be treated. The enclosure 16 is moved over this loading area 12 and the ducting 28 connected to the respective joints 30. With the doors 20 closed and the lower edges of the doors 20 and side walls 18 lying in the water filled channel 36, a continuous water seal is provided around the lower edge of the enclosure 16. The material is then fired as required using the burners 22, with exhaust gases passing out through the ducting 38, through the after burner, and into the filter arrangement.

[0018] Once firing has been completed and appropriate cooling has taken place, the doors 20 can be opened and the enclosure 16 lifted off the ground by the lift arrangements 24. Following disconnection of the joints 30, the enclosure 16 can be moved off the respective loading

area 12 in a direction extending between the doors 20, and over the other loading area 12 which will have been loaded with material to be treated in the meantime. The treated material can then be unloaded as required.

[0019] There is thus described a kiln suitable for treating hazardous material which provides for a good seal around the enclosure, despite the fact that the enclosure is movable between two positions. Thorough burning and subsequent filtration of the exhaust gases is ensured.

[0020] Various modifications may be made without departing from the scope of the invention. For example, the channel could be filled with a different material. The enclosure and/or loading areas could take a different form.

[0021] Whilst endeavouring in the foregoing specification to draw attention to those features of the invention believed to be of particular importance it should be understood that the Applicant claims protection in respect of any patentable feature or combination of features hereinbefore referred to and/or shown in the drawings whether or not particular emphasis has been placed thereon.

Claims

1. A kiln, the kiln including two loading areas and an enclosure selectively movable between a first position enclosing a first of the loading areas, and a second position enclosing the second loading area, a respective channel being provided in the floor around each of the loading areas, which channel is fillable with a liquid, the kiln being arranged such that when the enclosure is in either of the first and second positions the lower edges of side walls of the enclosure locate in the respective channel such that when filled with liquid a liquid seal is formed thereat, firing means being provided within the enclosure to enable material at the loading areas to be fired when located within the enclosure thereat.
2. A kiln according to claim 1, **characterised in that** doors are provided at opposite ends of the enclosure which can wholly open so as to permit the enclosure to be moved from a loading area in the direction extending between the doors.
3. A kiln according to claim 2, **characterised in that** when closed lower edges of the doors locate in the respective channel.
4. A kiln according to any of the preceding claims, **characterised in that** raising means is provided for selectively raising the enclosure off the ground to permit movement thereof.
5. A kiln according to any of the preceding claims, **characterised in that** water is located in the respective channels.
6. A kiln according to any of the preceding claims, **characterised in that** the kiln includes exhaust means for exhausting gases from the enclosure during firing.
7. A kiln according to claim 6, **characterised in that** an after burner arrangement is provided to cause burning of gases passing through the exhaust means.
8. A kiln according to claims 6 or 7, **characterised in that** respective exhaust means are provided for each loading area.
9. A kiln according to claim 8, **characterised in that** the respective exhaust means are interconnected.
10. A kiln according to any of claims 6 to 9, **characterised in that** a filter arrangement is provided through which the exhaust gases pass prior to release to the atmosphere.
11. A kiln according to claim 10, **characterised in that** the filter arrangement includes a ceramic filter.
12. A kiln according to any of the preceding claims, **characterised in that** receptacles for materials to be treated are provided at, or movable to, the loading areas.

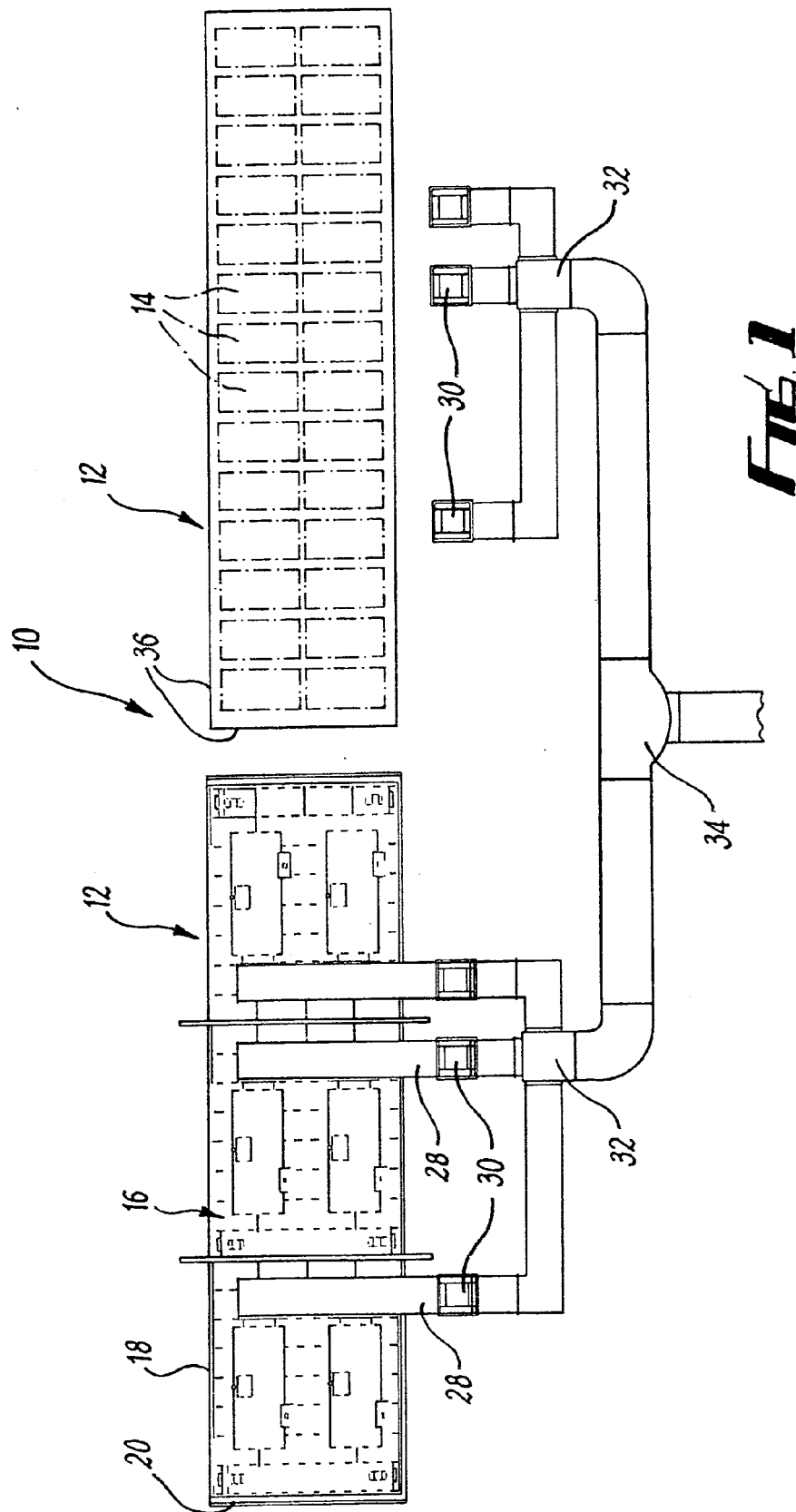


FIG 1

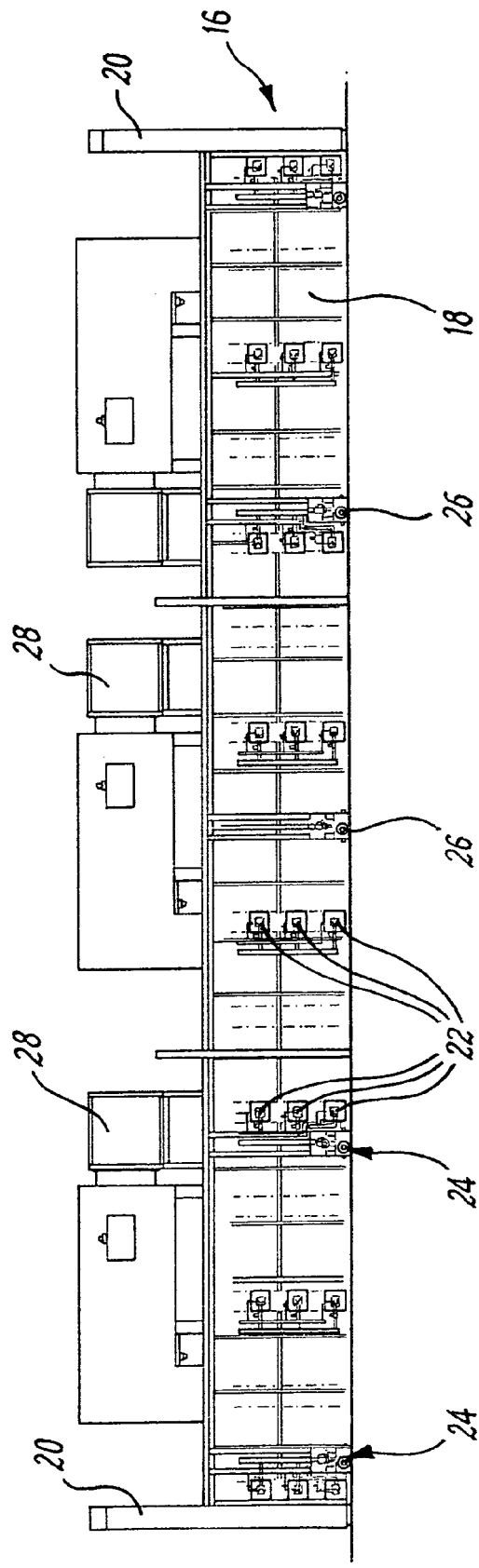


FIG. 2

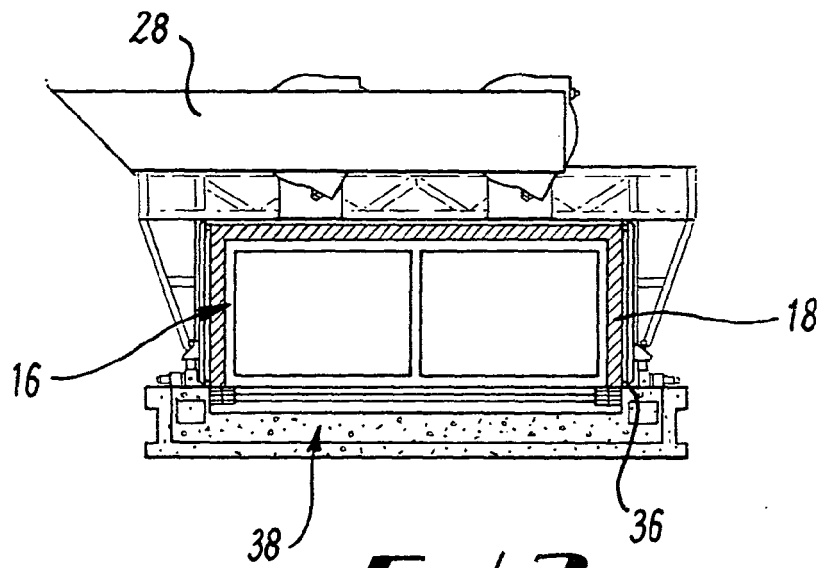


Fig. 3

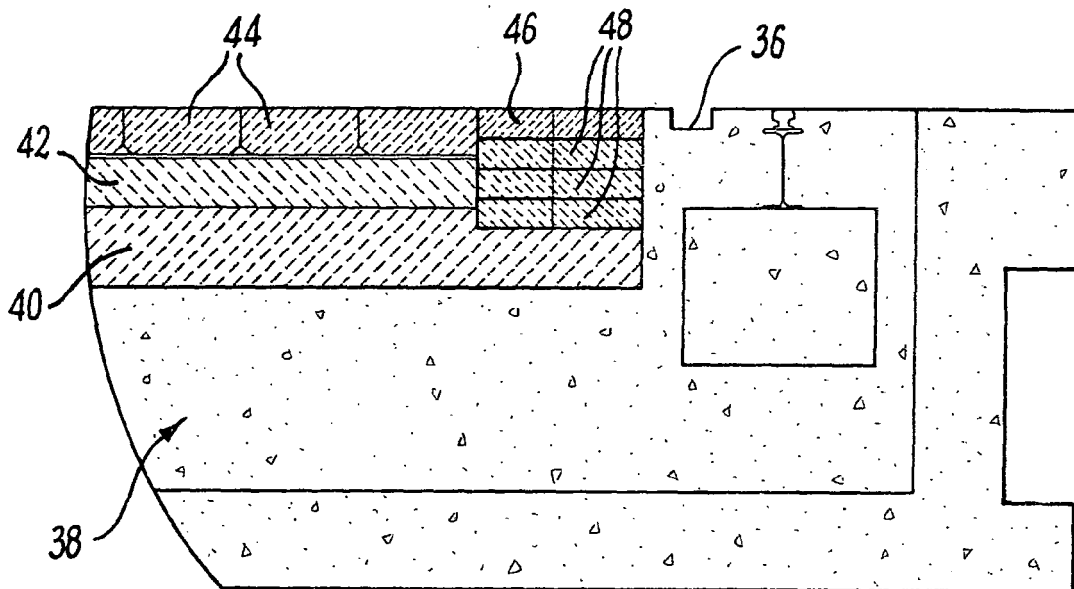


Fig. 4