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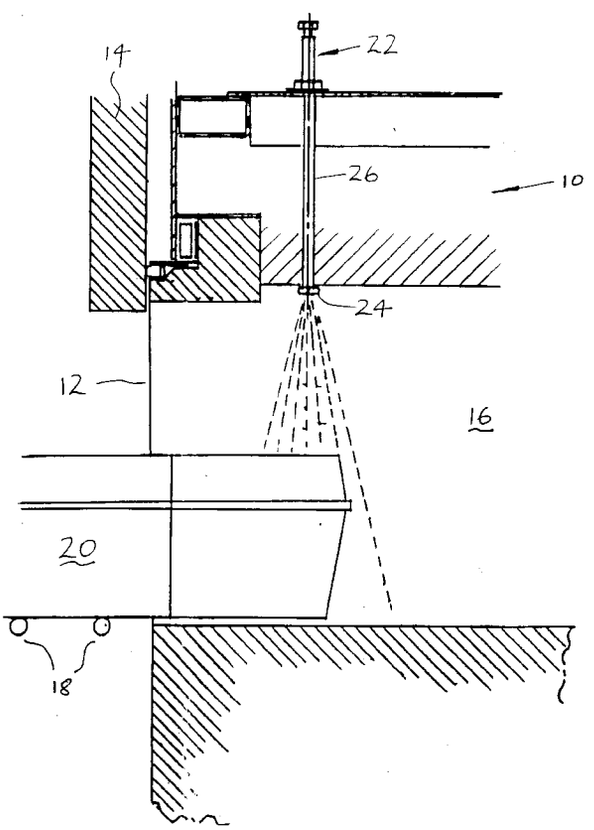
(54) Cooling apparatus for a cremator.

(57) This invention provides cooling apparatus 22 for a cremator 10 in order to prevent premature varnish ignition in a coffin 20 or wasteful heating and cooling of the whole cremator 10. The apparatus 22 includes a plurality of nozzles 24 connected via at least a pipe 26 to a water supply so as to form a curtain or spray of water across the cremators entrance 12 when a door or gate 14 is opened. The formation of the spray curtain may be automatic or manually controlled. The exterior of a coffin is thus cooled immediately on entry into the cremator, thus avoiding the ignition of its varnish before the door 14 is closed.



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This invention relates to cooling apparatus for a cremator intended to cool a coffin during loading into the cremator and prevent premature ignition thereof.

In order to ensure quick and efficient combustion of a coffin inserted into a cremator, the cremating furnace is normally operated at a high temperature, for example 850° C. In some cases such operating temperatures may be governed by environmental considerations and legislation may impose minimum operating temperatures on cremator operators. At such elevated temperatures however, certain materials will ignite very quickly, for example, the varnish finish on a coffin. Thus, if a coffin were to be inserted in a cremator at a temperature of 850° C the varnish would spontaneously ignite causing flame and smoke to discharge backwardly into the loading room. Such occurrences can be hazardous to the operator and cause a fire risk in the operating room.

It is known therefore to air cool the cremator to below the ignition temperature of the more flammable material prior to loading of a coffin. Such cooling would normally be to around, for example, 750°C and consequently the cremator would be required to be reheated up to the operating temperature after loading with a coffin.

It will be understood that whilst such an arrangement overcomes the problem of premature ignition it requires constant cooling and heating of the cremator furnace and is hence ineffecient and time consuming.

It is an object of the invention therefore to provide cooling apparatus for a cremator such that loading of a coffin may take place at an elevated temperature without premature ignition of the more flammable constituents of the coffin. A preferred aspect of the invention therefore provides cooling apparatus for a cremator comprising means for forming a curtain of water across a cremator's entrance, the means being arranged to operate at least during the period for which a door of the cremator is opened for loading thereof.

According to this aspect of the invention there is provided a curtain of water by way of, for example, a plurality of nozzles such that as a coffin is loaded into the cremator a cooling film of water is formed on the exterior surface. In this way the coffin itself is cooled below the combustion temperature of its varnish or other flammable materials and premature ignition thereof is prevented. Whilst loading is being effected it will be understood that the temperature of the cremator can be maintained at the normal ignition temperature and that ignition of the coffin can take place only when the water spray has been turned off.

In a preferred embodiment of the invention the water spray is operated automatically by the opening of the door to the cremator such that a curtain of water is formed immediately prior to the insertion of a coffin. Additionally the water spray is automatically stopped on the closing of the door such that the coffin is no longer cooled and ignition can take place normally thereafter.

It will be understood that at the operating temperature of a cremator a water spray will usually be turned into water vapour practically instantaneously on entrance into the cremator furnace. The spray thus formed however, not only cools the coffin and its immediate surrounds by way of heat conduction but the required heat of vaporisation of the water itself temporarily reduces the available heat energy for raising the temperature of the coffin thus preventing premature ignition.

A further advantage of apparatus according to an aspect of the invention is that increased control over the cremators oxygen content is obtained. Environmental emission laws require that a cremator has a minimum oxygen content to sustain combustion, cooling of the cremator reduces the demand for oxygen and hence increases the oxygen present.

Additionally it is possible to use the apparatus to supply a curtain or spary of water within the cremator whilst it is in use. In this way, smoke emission can be controlled or surpressed when required.

preferably the cooling apparatus is provided with override means such that the water spray can be manually or automatically operated via computer when required. In this way the water can be used to cool the cremator furnace either between each loading cycle or at the end of a period of use and when the cremator is desired to be cooled down quickly for an extended period of time or to cool it during the cremation process.

The invention will be described further by way of example with reference to the accompanying drawings in which:-

Fig. 1 is a sectional view of a preferred embodiment of the invention; and

Fig. 2 is a part sectional view of a control system for a preferred embodiment of the invention.

In Fig. 1 a cremator 10 is provided with an entrance 12 and a door 14 disposed so as to be moveable against the entrance 12. The cremator interior 10 is provided with a plurality of gas jets or other similar heating means (not shown) such that objects placed in the interior 16 can be heated to an elevated temperature. A plurality of rollers 18 located outside the furnace and adjacent to the entrance enable large objects to be easily placed within the cremator interior 16. It will be understood that the drawing does not show the full cremator and its furnace and only the entrance or insertion end is shown for simplicity and relevance.

In the UK such a cremator would normally be operated at approximately 850°C for the incineration of objects placed therein. This temperature is determined by environmental considerations and legislation. At such a temperature however, a coffin 20 inserted into the cremator through the entrance 12 will immediately burst into flame as the temperature is

sufficiently high to cause ignition of the coffin's varnish finish. In normal cremators therefore it is usual to cool the cremator interior to a temperature of 750°C or less such that loading of coffins can be performed without ignition of the varnish. Such cooling and consequential requirement for reheating is wasteful in terms of time and energy.

The invention therefore provides cooling apparatus 22 in the form of one or more nozzles 24 mounted in the cremator's roof and disposed so as to provide a curtain of water across the entrance 12 to the furnace interior. The nozzles 24 are therefore attached via a pipe 26 or plurality of pipes to a supply of water.

Fig. 2 shows the cooling apparatus 22 in more detail, from which it can be seen that the pipe 26 connects to a solenoid valve 28 controlling the flow of water along a pipe 30. The pipe 30 connects to a high pressure pump 32 which draws water from a reservoir tank 34 located relatively thereover.

The tank 34 is provided with a non-return valve 36 on its connection to the pump 32, a float valve 38, drain 40 and an overflow pipe 42. Additionally, a re-circulation pump 44 connected to a re-circulation line 46 and return 48 allows for water circulation when necessary.

Operation of the cooling apparatus 22 may be either manual or automatic. Where the control is by manual means a control device (not shown) is located, for example, adjacent to the door 14 such that the water spray can be actuated prior to opening of the door 14 and the entrance 12 of the furnace. Such an arrangement however provides a possibility that the door could be opened and a coffin inserted without the water spray being actuated and hence cause premature ignition of the coffin's varnish. Therefore is it preferable to provide automatic control of the cooling apparatus 22 such that the water spray is automatically turned on by the action of opening the door 14. Closing the door 14 will shut the water supply off and hence allow heating of the coffin to take place normally.

Even where automatic actuation of the cooling apparatus 22 is provided for, it may also be preferable to provide manual override such that the cooling apparatus 22 can be operated in unusual or extreme circumstances. Alternatively the override may be controlled by way of a computer either by direct operator command or in response to pre-programmed instructions of operating conditons.

The invention is not confined to the foregoing details and variations may be made thereto within the scope of the invention.

Claims

1. Cooling apparatus for a cremator characterised in that the apparatus comprises means (22, 24, 26) for forming a curtain of water across a cremator's entrance (12), the means being arranged to operate at least during the period for which a door (14) of the cremator (10) is opened for loading thereof.

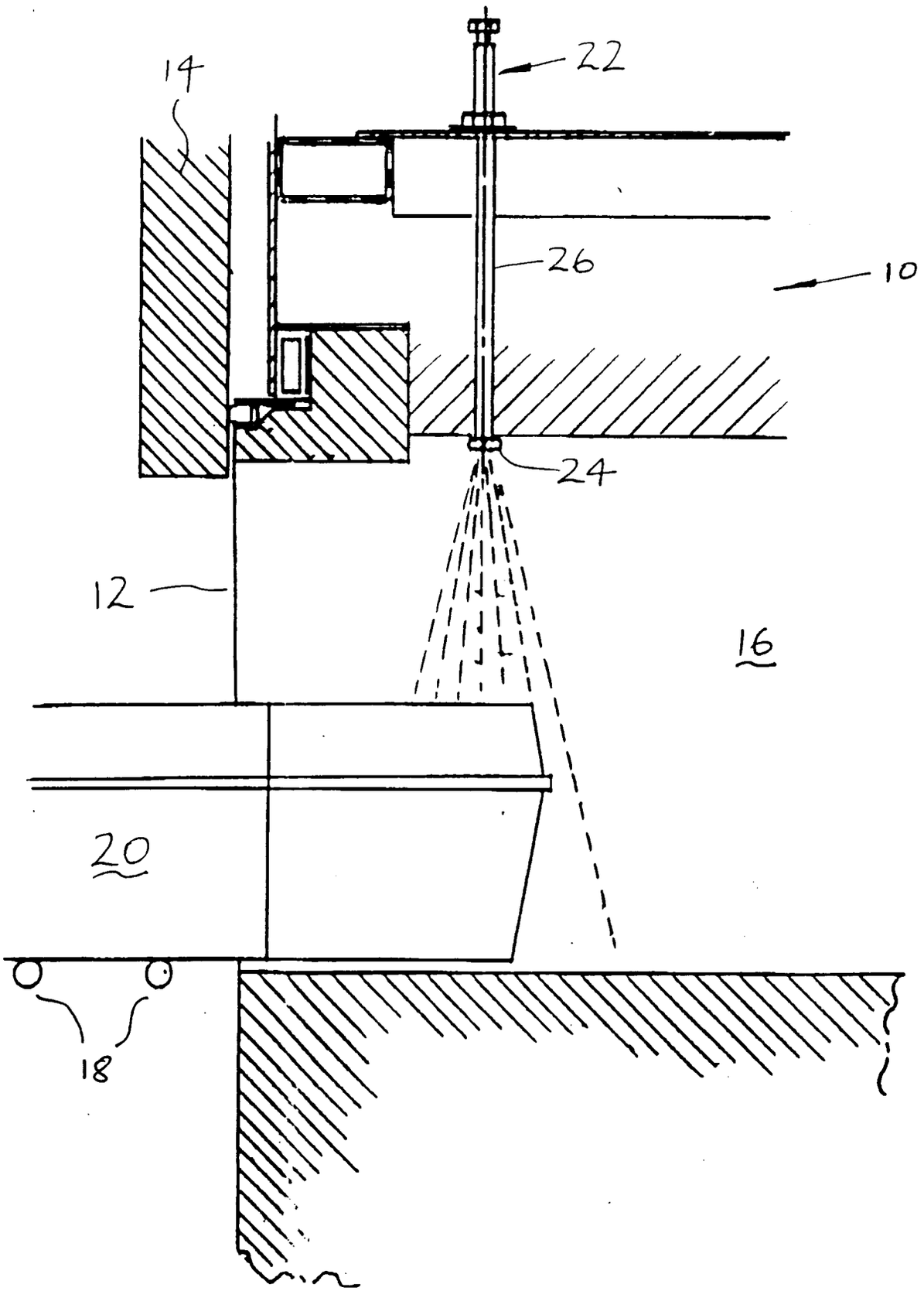
2. Cooling apparatus as claimed in Claim 1 characterised in that the curtain of water provided by way of a plurality of nozzles (24) such that as a coffin (20) is loaded into the cremator (10) a cooling film of water is formed on its exterior surface.

3. Cooling apparatus as claimed in Claim 1 or Claim 2 characterised in that a spray is operated automatically by the opening of the door (14) to the cremator (10) such that a curtain of water is formed immediately prior to the insertion of a coffin (20).

4. Cooling apparatus as claimed in Claim 3 characterised in that the water spray is automatically stopped on the closing of the door (14) such that the coffin (20) is no longer cooled and ignition can take place normally thereafter.

5. Cooling apparatus as claimed in any preceding claim in which the cooling apparatus (22) is provided with override means such that the water spray can be manually or automatically operated via computer when required.

6. An improved cremator characterised in that the cremator (10) includes apparatus (22, 24, 26) for supplying water to means (24) arranged to form a spray of water within the cremator (10).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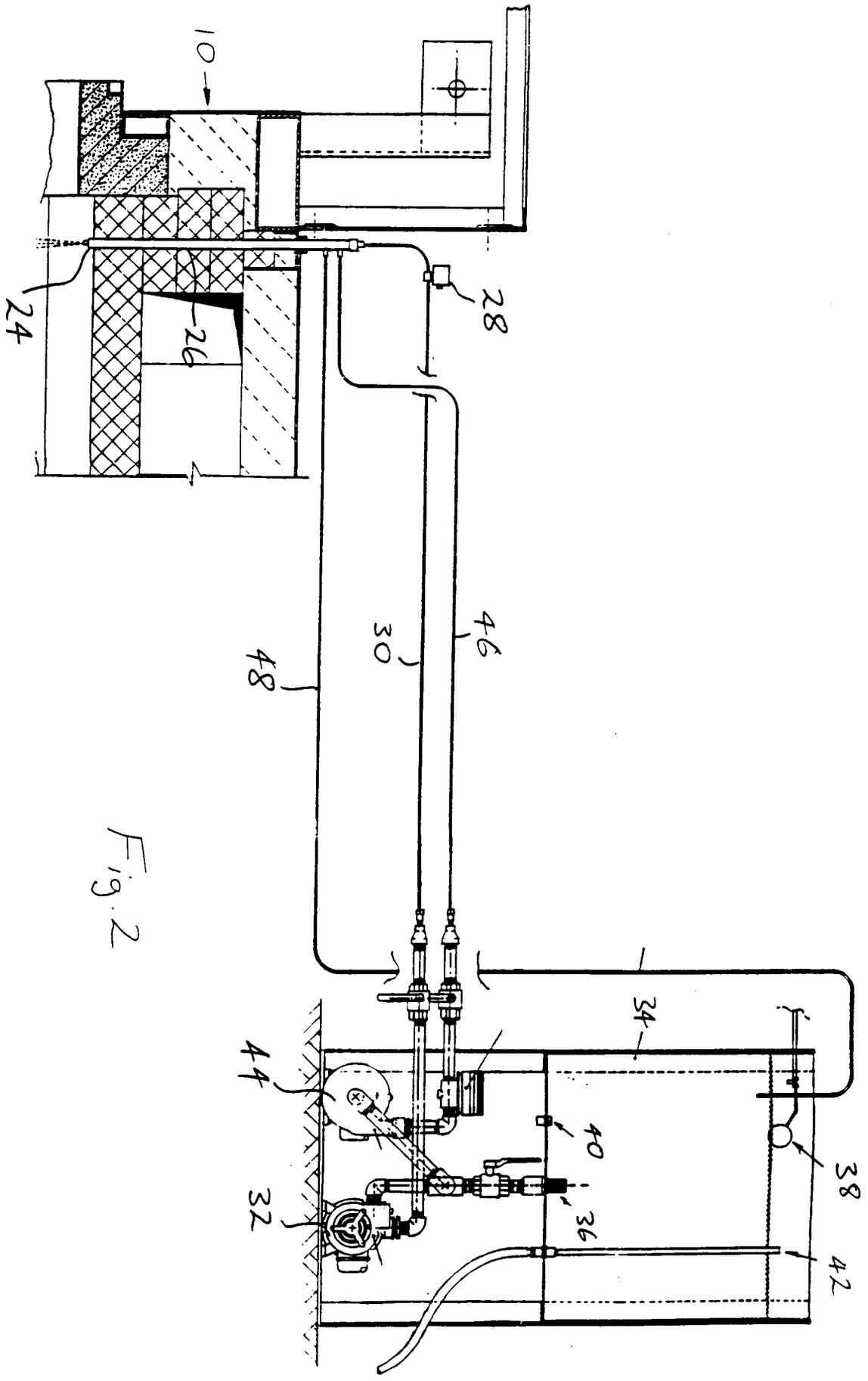

Fig. 2