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54) System for fast mineralizing buried corpses comprising a fixed locule construction and coffins arranged therefor.

57) A system for fast mineralizing buried corpses comprises a fixed burial construction (34) including locules (32) and inner metal coffins (7) and outer wooden coffins (30) for said locules, said construction and said coffins being provided with combined means (6, 8, 11, 12, 13, 17, 18) for conveying and draining the decomposition fluids of the corpse to an outer evaporation bed (23). There are further provided means for the ventilation of the locule and means (1, 3, 5) for cleaning the gases produced in the metal coffin before the burial.

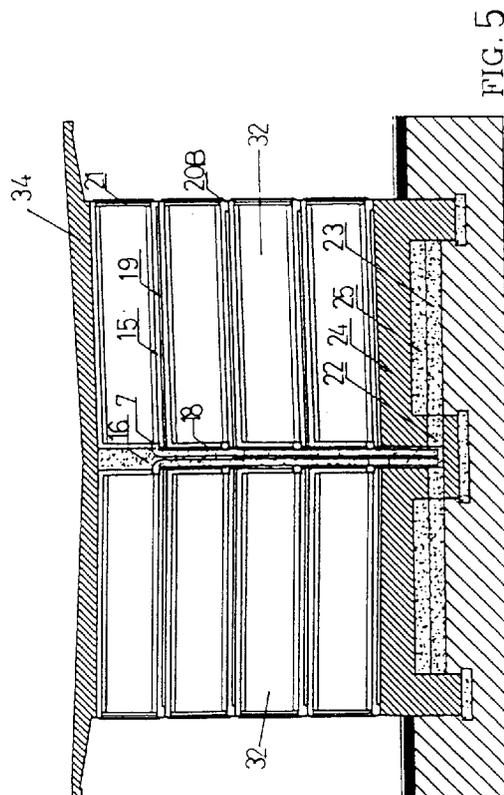


FIG. 5

EP 0 663 494 A1

The present invention relates to the funerary field and particularly the technology of manufacturing the inner and outer coffins and the fixed constructions similar to dovecotes for receiving such coffins.

The invention seeks to reduce the mineralizing time of the buried corpses by draining the decomposition fluids of the corpses and by cleaning the gases generated within the coffin before burial.

It is known that the regulations in force regarding the burial of corpses impose the use of two coffins, i.e. an outer wooden coffin and an inner metal coffin in order to assure a perfect gas and liquid tightness during the decomposition of the corpses.

Actually the metal coffin does not assure at present the perfect gas and liquid tightness because in most cases the inner pressure of such fluids can cause at any time the weld lines or the coffin itself to burst, especially in case of a fat corpse. In such case an uncontrolled emission of gases and, in case the lower part of the coffin yields, also of liquids occurs so that such liquids may flow down through any crack of the locule and appear on the surface.

Another case occurring at the morgue is that the metal coffins swell out so that the wooden coffin is uncovered as a result of the inner pressure; in order to make up for that problem a hole is secretly made in the inner coffin so as to allow the gases to be let off. It also occurs that the metal coffin holds out as long as the prescribed time for the exhumation and the subsequent inhumation but under such conditions the operation is very unpleasant.

It is evident from the foregoing that the use of a metal coffin, as devised, does not achieve the predetermined aims. A number of attempts have been made for burying the corpses without metal coffins into particular locules, however, such solutions might not be carried out due to the unfulfilled authorization by the relevant authorities not allowing the metal coffin specifically requested by the law in force to be avoided.

The inventive principle, on which the present invention is based, is of promoting the mineralization of the corpses by draining the decomposition fluids through a suitable draining circuit provided in the fixed construction for the burial and connectable to each metal coffin to be buried.

This is achieved according to the invention by providing a system for burying the corpses comprising:

A) a metal coffin which is provided both with a quick-attachable connector for discharging the gases generated by the decomposition of the corpses before burial and a device for draining the decomposition liquids of the corpses to the outer wooden coffin;

B) a portable device for filtering and cleaning the gases generated by the decomposition of the corpses which can be connected to the quick-attachable connector of the metal coffin before

the burial;

C) a wooden coffin provided with means for collecting the fluids from the metal coffin;

D) a building similar to a dovecote comprising a number of locules and provided with means for feeding such fluids to a draining column connected to an underlying vaporization room and means for ventilating such locules by using the room between locules to avoid the development of a condensate.

This invention will now be described with reference to the accompanying drawings:

Fig. 1 is a top plan view of the device for draining the decomposition fluids from the coffin;

Fig. 2 is a section view of said device along a plane perpendicular to the longitudinal axis of the coffin;

Fig. 3 is a partially sectioned view of the coffin along a vertical plane parallel to the longitudinal axis of the coffin;

Fig. 4 is a sectioned elevation view of the cleaning filter;

Fig. 5 shows a vertical section of the construction receiving the locules which is parallel to the longitudinal axis of the locules (without gas bleed holes according to the system for ventilating the locules),

Fig. 6 is a top view of said construction according to a horizontal section;

Fig. 7 shows a perspective vertical section of said construction along its vertical plane of symmetry perpendicular to the axis of the locules;

Fig. 8 is a perspective vertical section of the locules as viewed by looking the bottom of the locules;

Fig. 9 is similar to Fig. 5 but showing the bleed holes of the locules according to the ventilation system for the decomposition gases;

Fig. 10 is similar to Fig. 6 but showing the bleed holes of the locules according to the ventilation system for the decomposition gases;

Fig. 11 shows the middle longitudinal section along a vertical plane of the single locule comprising the gas bleed hole.

With reference to Figures 1, 2 and 3, in which the wooden coffin is indicated at 30 and the metal coffin at 7, the device for draining the decomposition fluids of the buried corpse is formed by a rectangular container of sheet metal embedded in the bottom of metal coffin 7 near the legs of the corpse.

As can be seen from Fig. 1 the bottom of the container is formed by a foil or plate 8 of the same material which is received in two perfectly calibrated guides 9 which are properly lubricated in order to facilitate the sliding during the opening step and sealed, for example, by silicone 10 (Fig. 2) in order to assure the maximum tightness before operating.

Such foil or plate 8 is connected to a steel wire 11 of

sufficient length to reach the outside of the locule along a guide on the bottom of the wooden coffin. Before the use, exceeding wire 11 is rolled and secured under the bottom of the wooden coffin 30.

On burying the coffin, wire 11 is unrolled so that its free end is brought outside the opening of the locule. After the closure of the locule, the device described above will be opened by pulling the wire. Thus the decomposition fluids, as soon as they are produced, flow out to a collection room 12 arranged under said device on the bottom of the wooden coffin 30 and are let off to the bottom of the locule through a corresponding opening 13 in the bottom wall of coffin 30. Such opening 13 is hidden by a removable little socle 14 which can be removed on burying the coffin.

As far as the stationary burial construction is concerned, the invention essentially provides a wall construction 34 similar to a dovecote, in which the locules 32 have a bottom inclined to the wall which is opposite to the opening of the locule for entering the coffin and in which a hole 17 is provided.

Between two facing rows of locules 32, as can be seen in Figures 5 and 9, there is provided a vertical draining passageway or hollow space 16 which is preferably filled with sand and communicates with each locule 32 through the respective holes 17 and suitable gaps 22 arranged in the foundations, an aerating sand bed 23 being also provided under the carrying concrete bed 24 and foundation 25 of the dovecote. Thus a natural aeration leading to the evaporation of all of the organic fluids flowing down of the locules to the passageways and hollow spaces is obtained by such arrangement. Gaps or hollow spaces 19 for the aeration of the locules are also provided above the latter to avoid that a condensate is formed therein. Hollow spaces are also provided to separate the horizontal walls of locules overlying to one another.

As can be seen in the embodiment of Fig. 8, hollow spaces 19 are formed by ribbings 20 provided on both longitudinal walls of locule 32. Such ribbings are connected at the front side to the bottom of the locule along a suitable width 20B (Fig. 5).

A bent pipe 18 preferably of PVC, which is filled with filtering, absorbent material, for example charcoal, and projects downwards within hollow space 16, is connected to hole 17.

In order that the construction system described above can assure that all of hygienic, sanitary problems will be overcome, it is necessary that both the locules and the construction therefor have suitable size and are built by resorting to appropriate methods. To this end, on making experiments it has been noted that better results are obtained when:

- the locule is built out of the burial construction by subjecting to vibration the concrete casting forming the walls 15 in order to be compact and impermeable to liquids and gases to the maximum extent;

- concrete having R'bk not lower than 400 kg/cm² is reinforced with an electrowelded net having a diameter of at least 5 mm and a mesh preferably of 15x15 cm;
- the thickness of the five walls is not lower than 5 cm, the ribbings 20 have a thickness of about 7 cm and a height of 2-3 cm. This allows extremely reduced hollow space between locules having a height of about 2-3 cm to be provided; such arrangement promotes the air circulation and the draft in the hollow spaces. The width 20B is not lower than 10 cm;
- the assembling of the locules is carried out by using suitable adhesives at the ribbings and the front resting surface in order to seal the hollow space described above but not the side facing the rear hollow space 16 filled with sand;
- the plane of the locule has a slope not lower than 5 cm to hole 17 formed between said plane and the edge of the rear wall;
- bent pipe 18 has a diameter of about 60 mm and a length of about one meter;
- rear hollow space 16 filled with sand has a thickness of 15 to 20 cm;
- the opening through which the coffin is pushed into the locule is closed by a prefabricated plate 21 of the same material as the locule having a thickness not lower than 3,5 cm and being sealed with suitable materials.

With reference to Fig. 4 the portable filtering and cleaning device is formed by a multiuse metal box 1 filled with compressed charcoal 2. Such cleaner is connected to the cover of the metal coffin 7 by coupling quickly attachable/detachable socket 3 and connector 5 to allow the decomposition gases within the coffin to be drained and cleaned. The generated output vapours are neutralized by an electrical resistance at 12 V located at the opposite end of box 4.

In case the coffin is standing at a death room, the output of the filtering box will be connected to a spiral pipe instead of the resistance so that the vapours will be vented to a common pipe connected to the atmosphere.

During the test carried out for draining the decomposition fluids of the corpses from the coffin a prototype of the locule described above was arranged such that a portion of the upper wall was made of a glass sheet in order to see the interior thereof. A coffin of zinc with a cover of crystal glass containing 122 kg of corpse-like materials (2 sheep and 2 intestines of pig) was enclosed in such prototype of the locule. During the test a significant amount of condensate was noticed at the inner surface of the crystal cover of the locule. As a result of this, such problems was overcome by providing the upper wall of locule 32 with a hole 26 communicating with hollow space 19 between said locule and the overlying locule and, through said hollow space, also with the filtering and

cleaning column 16 filled with sand (evaporation area).

As a result of such solution the condensate after 24 hours was strongly reduced.

Such a strong reduction of the condensate brings to a further confirmation of an air circulation due to Venturi's effect generated in combination by components 26, 19, 16 and 23 as there cannot be assured that the temperature difference alone can promote an outward air solution so as to cause such a strong reduction of condensate.

Before drilling hole 26 mentioned above the weight of the coffin was checked so that after 71 days a weight reduction of 63 kg due to water leakage could be noticed.

On the ground of the arguments mentioned above and without traces of humidity on the concrete construction, such a material balance can be explained only by a draining of the humidity due both to the absorption of the sand 16 contained between the opposite rows of locules and the already mentioned air circulation.

It should be then appreciated that air circulation in the hollow spaces as well as the hole formed in the upper wall of the locule play an important role.

According to experimental tests it can be stated that the corpse decomposition gas holding efficiency of the portable filtering device according to the invention is not lower than 98% under experimental conditions and certainly greater than such amount under conditions of slow continuous letting off of gases, as it is the actual case.

As far as the draining of the decomposition fluids and the fast drying of the corpse is concerned, a considerable efficiency was noticed even under experimental conditions which were in such case much more critical than in the actual case.

Actually the present draining system assures a very high draining of the humidity with the result of a considerable high drying of the corpses (as an average 0,9 kg water/day) without causing any damage to the construction and any pollution of the environment.

It should also be noted that after the opening of the draining device the area surrounding the experimental field did not stink; the passage of the fluids from the locule to the filtering area is controlled by the permeability of the charcoal filter which is reduced with time due to the clogging caused by the retention of organic material. It can be easily supposed that as a result of the accumulation of organic residues the filtering rate is reduced until being almost zero, and the restoration of the filtering capability is determined by the next decomposition of said organic residues.

Thus a gradual draining of liquids is obtained in the evaporation area filled with sand with the result of the humidity draining because of the entrainment due to an even small air circulation. The sand drawings after 30 days from the opening of the draining device al-

lowed a lack of humidity to be detected at a distance of 15 cm from the lower end of the charcoal filter.

In addition to the indirect confirmation of an air circulation which avoids the stagnation of humidity, the present construction does not allow the humidity to pass from the upper to the lower locules, as it is the case when there is no hollow space between said locules.

Therefore, it should be stated that the use of the proposed solutions allows a number of advantages to be achieved such as the simplification of the corpse transportation, economical and social advantages due to the saving of cemetery areas (actually the same locule could be used 4 to 5 times in 10 years with a reduction of locule needs by 75-80%), no need of storing the corpses, any modification of those social, cultural attitudes that prohibit to cremate a corpse after death, while in the present solution the corpses could be exhumed after two years from the death.

Claims

1. A system for fast mineralizing buried corpses, wherein it comprises in combination a fixed burial construction (34) including locules (32), inner metal coffins (7) and outer wooden coffins (30) for said locules, said construction and said coffins being provided with means for conveying and draining the decomposition fluids from the buried corpse to an outer evaporation area, means being also provided for aerating the locule and cleaning the gases formed in the metal coffin before the burial.
2. A system for fast mineralizing buried corpses according to claim 1, characterized in that said means for draining the decomposition fluids of the buried corpse to an outer evaporation area are formed in combination by:
 - a metal box (6) embedded in the bottom of metal coffin (7) and closed at the lower side by a foil or plate (8) of the same material which can slide into calibrated guides (9) and after the burial can be opened by a steel wire (11) which can be reached from the outside so that the decomposition fluids of the corpse can be drained from the metal coffin (7) so as to reach a collection area (12) arranged in the bottom of the wooden coffin (30) and to be conveyed outside coffin (30) through an opening (13) for flowing down to the bottom of the locule (32); and
 - a downward slope of the bottom of the locule (32) from the corpse entrance opening to a hole (17) which is formed at the bottom of the vertical rear wall of the locule and is connected to a descending pipe (18) filled with filtering, absorbent mate-

- rial and received in a vertical conduit or hollow space (16) communicating with a suitable bed (23) also filled with filtering material and located beneath a concrete bed (24) of the fixed dovecone construction (34). 5
3. A system for fast mineralizing buried corpses according to claims 1 and 2, characterized in that the filtering material filling hollow space (16) and bed (23) is sand, while tube (18) is filled with charcoal. 10
4. A system for fast mineralizing buried corpses according to the preceding claims, characterized in that the burial construction (34) includes two rows of locules (32) facing to each other and a common vertical hollow space (16). 15
5. A system for fast mineralizing buried corpses according to the preceding claims, characterized in that said means for the ventilation of the locule is a hole (26) formed in the upper wall of locule (32) and directly communicating with an overlying hollow space (19). 20
6. A system for fast mineralizing buried corpses according to the preceding claims, characterized in that said hollow space (19) located between two overlain locules is formed by two side longitudinal ribbings (20) of the horizontal lower wall of upper locule (32) and has no rear wall so as to directly communicate with the rear vertical conduit (16). 25
7. A system for fast mineralizing buried corpses according to the preceding claims, characterized in that said hollow space (19) has a reduced height preferably between 2 and 3 cm in order to promote the air circulation and change in the hollow space. 30
8. A system for fast mineralizing buried corpses according to the preceding claims, characterized in that said means for cleaning the gases produced in the metal coffin before the corpse burial is a cleaning filter comprising a metal box (1) filled with absorbent material (2) having an end provided with a quick attachable/detachable socket (3) to be connected to a quick attachable/detachable connector (5) secured to the cover of metal coffin (7) and connected at the opposite output end (4) to an electrical 12 V resistance. 35
9. A system for fast mineralizing buried corpses according to the preceding claims, characterized in that the absorbent material filling the metal box (1) is compressed charcoal. 40
10. A system for fast mineralizing buried corpses according to claims 8 and 9, characterized in that the cleaning filter is portable and can be used several times. 45
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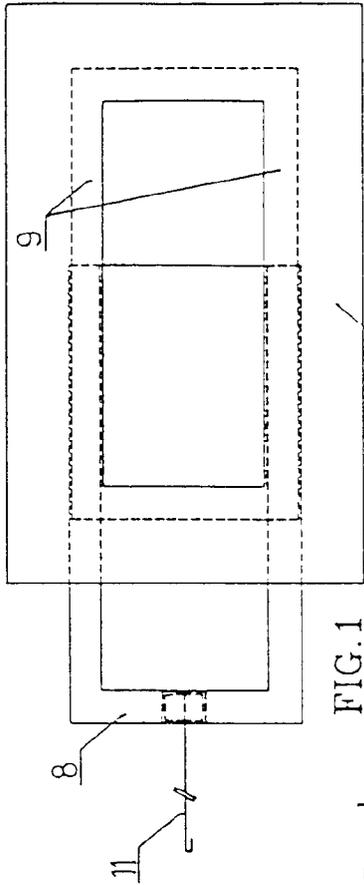


FIG. 1

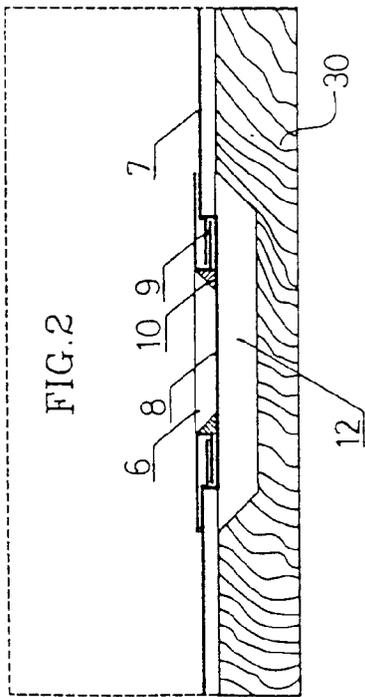


FIG. 2

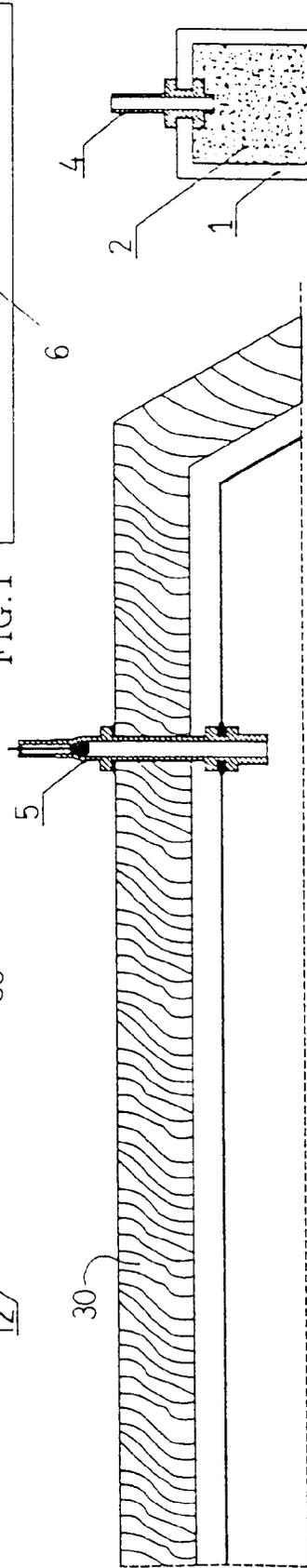


FIG. 3

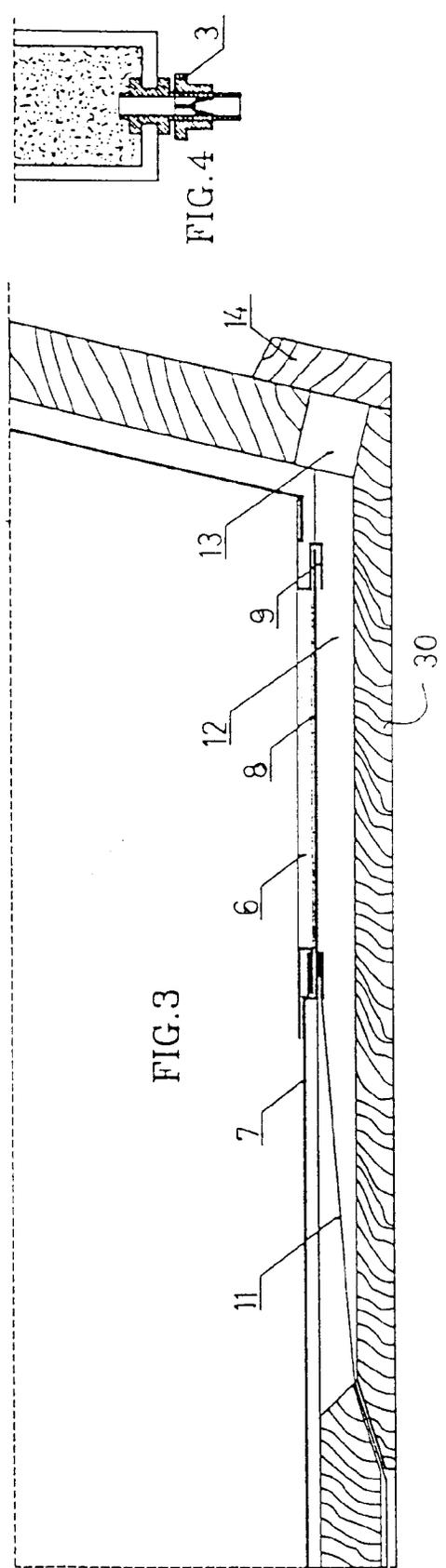


FIG. 4

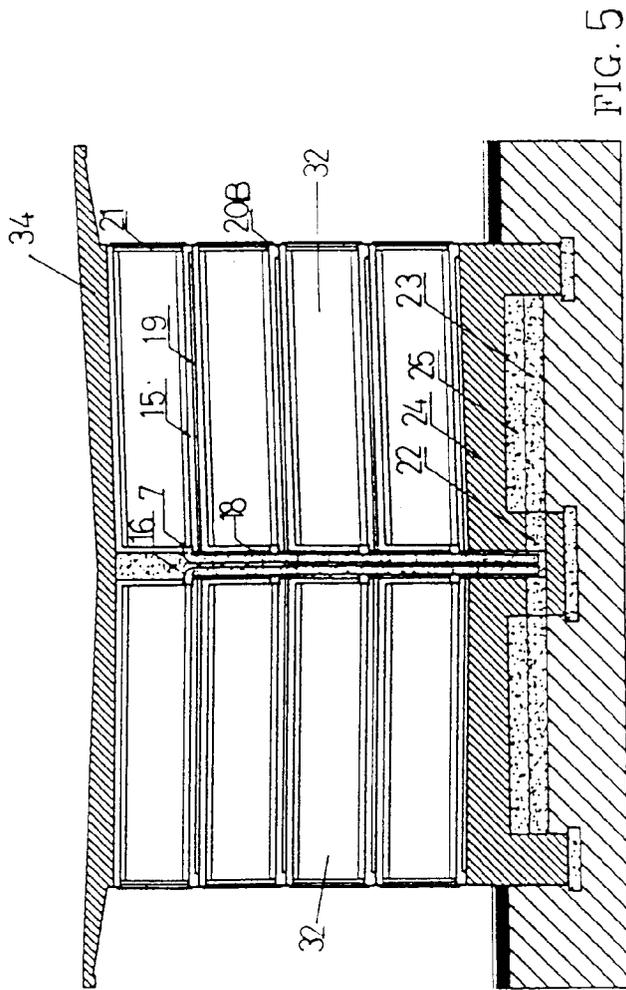


FIG. 5

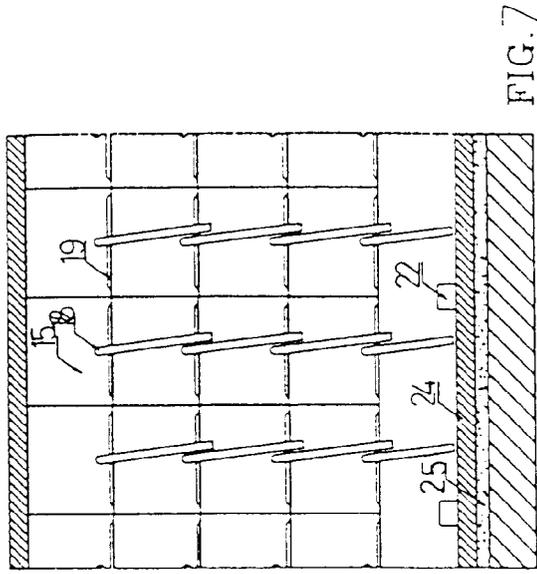


FIG. 7

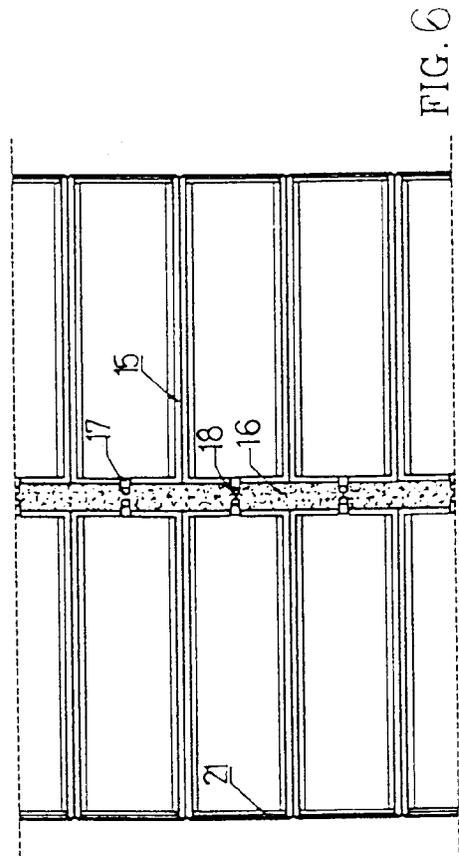


FIG. 6

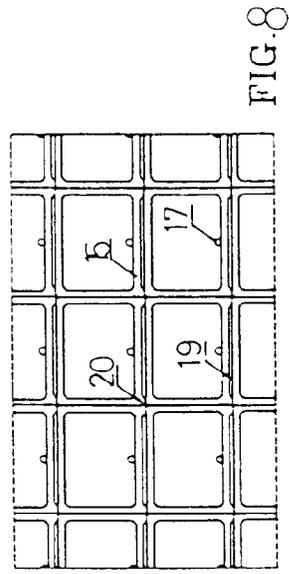


FIG. 8

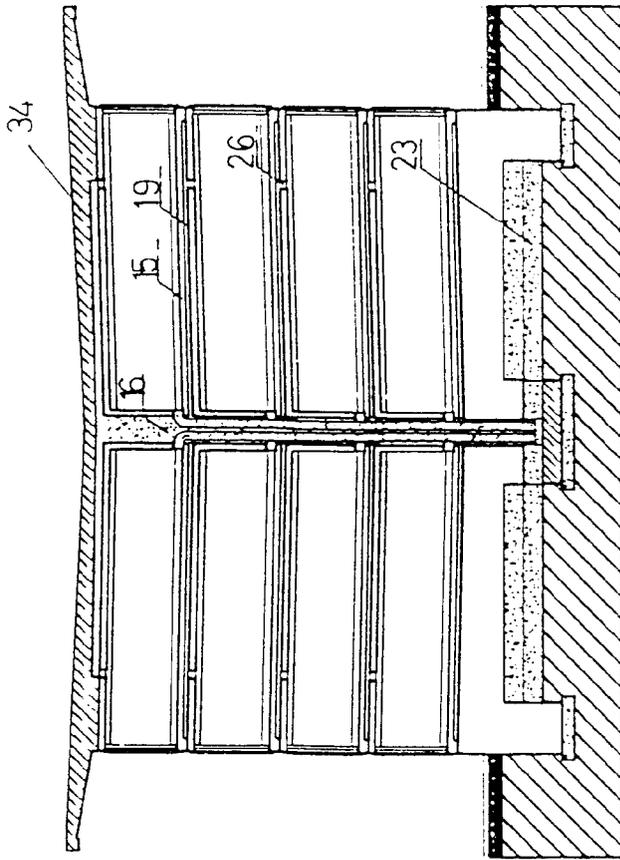


FIG. 9

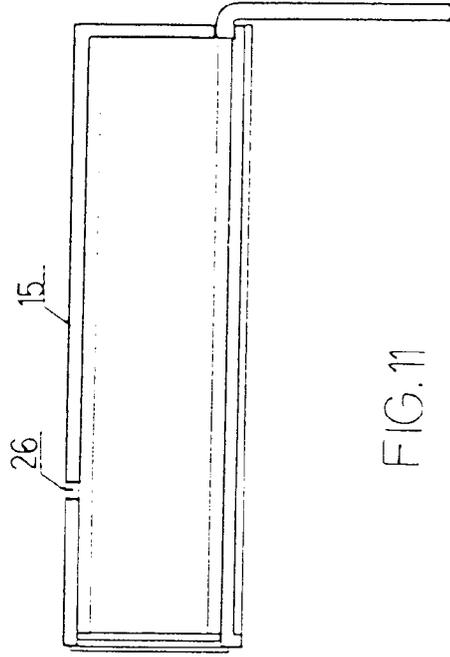


FIG. 11

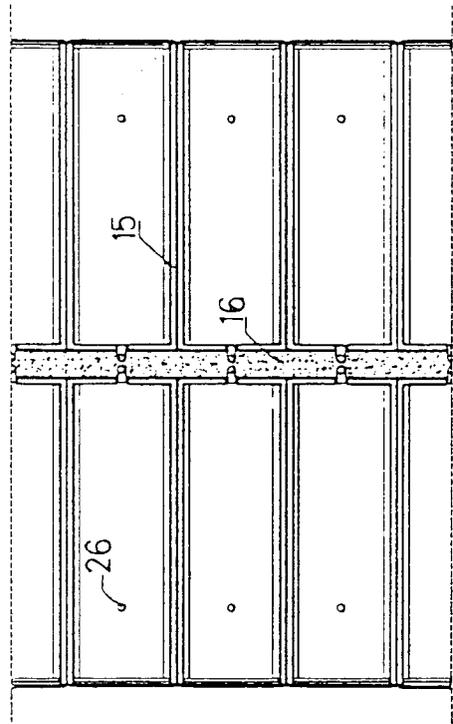


FIG. 10



European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 94 83 0321

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
Y A	GB-A-P20670 (J. P. COLLETT) * page 1, line 31 - page 2, line 42 * ---	1 2-5	E04H13/00 A61G17/00
Y A	FR-A-1 247 430 (POMPES FUNÈBRES GÉNÉRALES ET AL.) * page 2, column 1, last paragraph - column 2, paragraph 4; figure 2 * ---	1 8,9	
A	US-A-5 217 622 (FLORES) * abstract; figures 1,6 * ---	1,4	
A	EP-A-0 482 670 (J. CARRIER) * column 3, line 9 - column 5, line 11; figures * ---	1,3,9	
A	EP-A-0 395 501 (SOGEA ET AL.) * column 2, line 6 - line 39 * * column 4, line 41 - line 46; figure 1 * ---	5,8,9	
A	US-A-2 250 824 (W. I. DAVIS) * page 2, line 16 - line 36; figures * ---	1,2	TECHNICAL FIELDS SEARCHED (Int.Cl.6) E04H A61G
A	US-A-2 665 471 (D. U. GOULD) * column 2, line 37 - line 47; figures * ---	8,10	
A	CH-A-472 887 (H. GERBER) * the whole document * -----	2	
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 24 April 1995	Examiner Righetti, R
<p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application I : document cited for other reasons & : member of the same patent family, corresponding document</p>			

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