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☒ Description : paged 1 to paged 5
☒ Claim(s) : paged 6 to paged 7
☐ Drawing(s) : paged to paged
☒ Abstract : paged 8 to paged

A system for fighting fires

The present invention relates to a system for fighting fires, especially for hotels, office buildings, industrial plants or even communities.

Conventional sprinkler equipments require great amounts of water, which has led to difficulties with water supply especially in southern dry countries. It has been necessary to build big water reservoirs and pump stations to secure the operation of the sprinkler equipments. The equipments are generally electrically driven, but since it is not possible to rely on that electric power is available, particularly in case of serious fires, it has been necessary to have e.g. diesel-driven pumps, in addition to the electrically driven pumps, or diesel-driven generators at hand.

Such known fire-extinguishing installations are extremely costly.

The object of the invention is to provide a novel system for fighting fires, which system is reliable, simple and thus cheap.

The system according to the invention is mainly characterized in that the unit to be protected is provided with at least one such preferably automatic fire-extinguishing installation known per se which is arranged to spray mist-like extinguishing liquid as small drops at a high pressure (usually about 100 to 300 bar) and which is arranged to be driven by means of accumulated energy, preferably hydraulic accumulators, for initial fighting of a fire which has broken out and that final fire-fighting is arranged to be carried out by means of a fire-fighting vehicle provided with a water tank and a high pressure pump.

The hydraulic accumulators of the fire-extinguishing installation are preferably dimensioned in such

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a way that liquid mist can be sprayed until the fire-fighting vehicle arrives at the place, which can be supposed to take place in about ten minutes.

5 In case of fairly "normal" fires, said fire-extinguishing installation with hydraulic accumulators is capable of extinguishing or at least pressing down the fire until the fire-fighting vehicle arrives, whereby final extinction in many cases can be carried out by means of portable hand extinguishers.

10 However, in case of a serious fire or a so-called smoulder fire, it is not always so, whereby the final fire-fighting is arranged to be carried out by connecting the water tank of the fire-fighting vehicle via the high pressure pump to said fire-extinguishing
15 installation.

The system according to the invention requires no big water reservoirs and does not depend on electric power either. If the unit to be protected is extensive, it is naturally possible to have two or more fire-fighting
20 vehicles at hand.

The invention relates also to a novel fire-fighting vehicle.

In known fire-fighting vehicles, the power of the water pump is taken from a power outlet connected
25 to the drive engine of the car. The power available here for the water pump constitutes only a relatively small part (about 10 %) of the total power of the drive engine. Considering the use intended now, the known fire-fighting vehicles are moreover unnecessarily big,
30 due to which they are expensive, on the one hand, and on the other hand, they cannot get through narrow passages.

The fire-fighting vehicle according to the invention comprises a water tank and a high pressure
35 pump. The driving shaft of the pump is arranged to be



connected to the cardan shaft of the fire-fighting vehicle by means of a bayonet coupling known per se. Thanks to this, the water pump can utilize the whole power of the car engine. The car engine and thus the whole fire-fighting vehicle can be made considerably smaller than before.

In a preferred embodiment, the fire-fighting vehicle is also provided with at least one hydraulic accumulator, which can be connected to the fire-extinguishing installation for the time needed for connecting the cardan shaft of the car to the main pump.

To the power outlet of the car engine, which outlet generally gives about 10 % of the maximum power of the engine, can preferably be connected a smaller pump to keep the hydraulic accumulators charged and to make it sure during driving to the scene of fire that the hydraulic accumulators will be fully recharged. In cold weather the charging pump has the additional advantage that, upon full recharging of the accumulators, it can be turned on to circulate water in the water tank via sequence valves (overflow valves) to prevent ice formation.

The fire-fighting vehicle is preferably also provided with outlets for so-called hand pistols for manual extinction, e.g. in accordance with what is disclosed in Patent Application 924119, and likewise with filling automatics for portable hand extinguishers having a capacity of 5 to 10 litres, for instance, to secure final extinction of the fire.

The fire-extinguishing installation included in the invention is preferably implemented in accordance with what is set forth in the international patent applications PCT/FI92/00060, PCT/FI92/00155, PCT/FI92/00156, PCT/FI92/00193, PCT/FI92/00213,

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PCT/FI92/00316, PCT/FI92/00317 and PCT/FI92/00330, in desired combination.

Therefore, it may not be necessary to illustrate the fire-extinguishing installation by a drawing. The attached drawing shows schematically a preferred embodiment of the fire-fighting vehicle included in the invention.

In the drawing the drive engine of the fire-fighting vehicle is indicated by the reference numeral 1, a water tank is indicated by 2 and a high pressure pump connected to the water tank is indicated by 3. The pump 3 is arranged to deliver water from the tank 2 to an outgoing main, which is connectable by means of a bayonet coupling 4. The driving shaft of the pump 3 is indicated by 5.

The cardan shaft of the car is realized in two parts 6 and 7, which are interconnected by means of a bayonet coupling 8. The pump 3 with the driving shaft 5 is positioned in such a way that, after the bayonet coupling 8 has been loosened, as is shown by dashed lines in the drawing, the cardan shaft part 6 can be swung for being connected to the driving shaft 5 of the pump by means of a bayonet coupling 9, after which the pump 3 has the disposal of the whole power of the engine 1.

A number of hydraulic accumulators 10 connected in parallel are also connected to the outgoing main via the coupling 4. These hydraulic accumulators can be utilized while the cardan shaft is connected to the pump shaft 5.

To the power outlet 11 of the engine 1 is connected a smaller pump 12, which can charge the hydraulic accumulators via its outlet 13 and, after the accumulators have been fully charged, set the water of the tank 2 in circulation via an overflow valve 14. A number of

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bayonet couplings for so-called hand pistols are indicated by 15 and a hose joint is indicated by 16.

5 The water tank 2 can have a volume of 2000
litres and the main pump 3 can have a driving pressure
of about 130 bar and a volume capacity of about 150
litres per minute, while the charging pump 12 can have
a driving pressure of about 200 bar and a volume capacity
of about 15 litres per minute. An efficient fire
extinction can be secured by these example values; the
10 fire-fighting vehicle is small and handy.

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Claims:

1. A system for fighting fires, especially for hotels, office buildings, industrial plants or communities, characterized in

that the unit to be protected is provided with at least one such preferably automatic fire-extinguishing installation known per se which is arranged to spray mist-like extinguishing liquid as small drops at a high pressure and which is arranged to be driven by means of accumulated energy, preferably hydraulic accumulators, for initial fighting of a fire which has broken out and

that final fire-fighting is arranged to be carried out by means of a fire-fighting vehicle provided with a water tank and a high pressure pump.

2. A system according to claim 1, characterized in that final fire-fighting is arranged to be carried out by connecting the water tank of the fire-fighting vehicle via the high pressure pump to said fire-extinguishing installation.

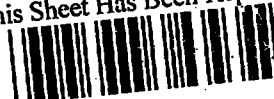
3. A fire-fighting vehicle, comprising a water tank and a water pump connected thereto, characterized in that the water pump is a high pressure water pump (3) and that the driving shaft (5) of the pump is arranged to be connected to the outgoing cardan shaft (6) of the drive engine (1) of the fire-fighting vehicle.

4. A fire-fighting vehicle according to claim 3, characterized in that the driving shaft (5) of the pump (3) is arranged to be connected to the cardan shaft (6) by means of a bayonet coupling (9).

5. A fire-fighting vehicle according to claim 3 or 4, characterized in that it comprises at least one hydraulic accumulator (10) coupled to a connection (4) to an outgoing main.



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6. A fire-fighting vehicle according to claim 5, characterized in that a charging pump (12) for said at least one hydraulic accumulator (10) is connected to a power outlet (11) of the drive engine (1).

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7. A fire-fighting vehicle according to claim 6, characterized in that the charging pump (12) is connected to the water tank (2), preferably via an overflow valve (14), for setting the water in the water tank (2) in circulation at least after said at least one hydraulic accumulator (10) has achieved full charging pressure.

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8. A fire-fighting vehicle according to any of the claims 3 to 7, characterized in that it comprises connections (15) for so-called hand pistols, the connections being coupled preferably both to the outlet of the pump (3) and to said at least one hydraulic accumulator (10).

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9. A fire-fighting vehicle according to any of the claims 3 to 8, characterized in that it comprises filling automatics for portable hand extinguishers.

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