

PATENTS ACT 1977

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DESCRIPTION OF INVENTION

"Improvements in or relating to a Pumping Arrangement"

The present invention relates to a pumping arrangement and more particularly to a pumping arrangement adapted to pump water.

A pumping arrangement which pumps water is often used to pump water into a water tank present in a ship, when the ship has docked in a harbour. Often the water tank in the ship is of a very considerable size and may take a long time to become filled with water. A single operator may thus simultaneously operate a relatively large number of pumps which are filling the tanks on a large number of ships in the harbour region. However, this does lead to the disadvantage that the operator may not be present when the tank on the ship becomes full. This means that water may be wasted. The present invention therefore seeks to provide an improved pumping arrangement.

According to the present invention, there is provided a pumping system for simultaneously supplying fluid to a plurality of tanks, the pumping system comprising a plurality of pumping arrangements for pumping a fluid, wherein each pumping arrangement comprises a pump, an inlet for the pump and an outlet for the pump, the pump being associated with a control arrangement which is associated with a level sensor adapted to be inserted into one of the plurality of tanks, the tank being connected to the outlet of the pump, and wherein the control arrangement is adapted to de-activate the pump when the level sensor senses fluid, the pumping arrangement further including a transmitter adapted to transmit a signal when the control unit de-activates the pump.

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Preferably a paging unit is also provided, the paging unit being adapted to receive the signal transmitted by the transmitter. Conveniently the paging unit is adapted to provide an indication identifying the transmitter when said signal is received.

The paging unit may include a display adapted to provide a visible display identifying the transmitter.

The pumping system may be adapted to pump water.

Preferably, the pumping system comprises a plurality of pumping arrangements with one or more paging units adapted to receive any signals transmitted by the transmitters and to provide an indication identifying the transmitter transmitting any signal received thereby.

The tanks may be located at plural berths along a wharf.

According to the present invention, there is also provided a method of simultaneously supplying fluid to a plurality of tanks, which method comprises

(a) inserting a first level sensor into a first tank for indicating when the fluid level in the first tank has reached a desired level,

(b) coupling a first pump outlet to the first tank to supply fluid to the first tank from a fluid source,

(c) starting a supply of fluid to the first pump outlet,

(d) inserting a second level sensor into a second tank for indicating when the fluid level in the second tank has reached a desired level,

(e) coupling a second pump outlet to the second tank for supplying fluid to the second tank from a fluid source,

(f) starting a supply of fluid to the second pump outlet,

(g) de-activating the supply of fluid to the first pump outlet when the first level sensor senses fluid,

(h) transmitting a first signal when the supply of fluid to the first pump outlet is de-activated,

(i) de-activating the supply of fluid to the second pump outlet when the second level sensor senses fluid, and

(j) transmitting a second signal when the supply of fluid to the second pump outlet is de-activated.

Preferably, the method comprises the further step
of

(k) equipping an operative with a paging unit for receiving the first and second signals

More preferably, the method comprises, in addition to the above described additional step, the further steps
of

(l) removing the first and second level sensors and de-coupling the first and second pump outlets in response to receipt of the first and second signals by the paging unit,

(m) transferring the first and second level sensors and the first and second pump outlets to other tanks of the plurality of tanks to which fluid is to be supplied, and

(n) repeating at least steps (a) to (j).

In order that the invention may be more readily understood, and so that further features thereof may be appreciated, the invention will now be described, by way of example, with reference to the accompanying drawing which is a schematic diagram of part of a pumping system in accordance with the invention.

A pumping system in accordance with the present invention comprises a plurality of main pumping arrangements 1. The example of a main pumping arrangement 1 shown in the drawing is associated for use with a receiver or "pager" 2.

The example of the main pumping arrangement 1 shown in the drawing comprises a pump 3 which may be of any appropriate design having an inlet 4

adapted to be connected to an appropriate source of water and an outlet 5 adapted to be connected to an appropriate inlet manifold of a ship or to be connected in some other way to discharge water into a water tank present in a ship.

A control arrangement 6 is provided to control the pump. The control arrangement may have appropriate manually operable controls, and may thus activate the pump 3 and may also de-activate the pump 3. A level sensor 7 is provided which is associated with the control 6. The level sensor 7 is of any appropriate design and is adapted to be lowered into the water tank to be filled by the pump, so that the level sensor is contacted by water in the tank when water in the tank has reached a desired level.

The control arrangement 6 is also associated with a transmitter 8 which transmits radio signals of an appropriate frequency. The signals transmitted by the transmitter 8 are coded with a code which is particular to that transmitter. The transmitter is associated with an aerial or antenna 9 which transmits the coded signal, which is adapted to be picked up by a receiver 10 which is associated with a further aerial or antenna 11. The receiver 10 and the aerial 11 comprise a "paging" unit 2. The receiver 10 is associated with a display 12 and the arrangement is such that when a particular coded signal is received a particular code number is displayed on the display 12, and the pager emits an audible sound.

It is to be appreciated that when filling a tank present on a ship a pumping arrangement 1 may be located adjacent the ship with the inlet 4 of the pump connected to a water supply hydrant, and the outlet of the pump 5 connected to the inlet manifold of the tank to be filled.

The level sensor 7 will be located in the tank to be filled at an appropriate level. Manually operable components on the control may then be operated so that the pump is activated. Water will then flow into the tank.

When the water level in the tank is such that the water touches the level sensor the control 6 will deactivate the pump so that no further water is introduced into the tank and will also activate a transmitter 8. The transmitter 8 will then transmit its coded signal which will be picked up by the receiver 10. An appropriate display will then be presented on the display 12 and, of course, an audible alarm signal will be generated by the receiver 10, as is conventional in a pager.

It is envisaged that a single operative, using equipment of the type described above, will be able to fill the tanks on a large number of ships without wasting water, and also without wasting time. The operative would initially connect up the inlet and outlet of the pump 3 in the manner described above and then switch the pump 3 on so that water is flowing into the tank. When the tank is full the transmitter 8 transmits a signal which is picked up by the paging device 2 which the operative will have about his person. This will give an indication as to precisely which pump has been de-activated because the associated tank is full. Thus the operative may be moving about the dock area, commencing filling operations on other tanks until he is effectively advised by the pager that the first tank is full. The operative may then move the pumping equipment from the first tank to another tank that requires to be filled.

It is envisaged that the pump arrangement 1 may be formed as an integral unit adapted to be mounted on the

back of a lorry and adapted to be lowered from the lorry to the wharf side when the pumping arrangement is to be used. The paging device 2 may be built into the cab of the lorry or may be a totally portable device.

The control unit 6 may have a "paging stop" button which can be depressed in order to stop the transmitter transmitting its signal, although the transmitter may be programmed to transmit its signal for a predetermined period of time and then automatically stop transmitting its signal.

The level sensor 7 may be connected to the control unit by means of a quick release coupling.



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CLAIMS

1 A pumping system for simultaneously supplying fluid to a plurality of tanks, the pumping system comprising a plurality of pumping arrangements for pumping a fluid, wherein each pumping arrangement comprises a pump, an inlet for the pump and an outlet for the pump, the pump being associated with a control arrangement which is associated with a level sensor adapted to be inserted into one of the plurality of tanks, the tank being connected to the outlet of the pump, and wherein the control arrangement is adapted to de-activate the pump when the level sensor senses fluid, the pumping arrangement further including a transmitter adapted to transmit a signal when the control unit de-activates the pump.

2. A pumping system according to Claim 1 further comprising a paging unit, the paging unit being adapted to receive the signal transmitted by the transmitter.

3. A pumping system according to Claim 2, wherein the paging unit is adapted to provide an indication identifying the transmitter when said signal is received.

4. A pumping system according to Claim 3, wherein the paging unit includes a display adapted to provide a visible display identifying the transmitter.

5. A pumping system according to any one of the preceding claims adapted to pump water.

6. A pumping system according to Claim 1 comprising a plurality of pumping arrangements with one or more paging units adapted to receive any signals transmitted by the transmitters and to provide an indication identifying the transmitter transmitting any signal received thereby.



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7. A pumping system according to any one of Claims 1 to 6 wherein the tanks are located at plural berths along a wharf.

8. A method of simultaneously supplying fluid to a plurality of tanks, which method comprises:-

- (a) inserting a first level sensor into a first tank for indicating when the fluid level in the first tank has reached a desired level,
- (b) coupling a first pump outlet to the first tank to supply fluid to the first tank from a fluid source,
- (c) starting a supply of fluid to the first pump outlet,
- (d) inserting a second level sensor into a second tank for indicating when the fluid level in the second tank has reached a desired level,
- (e) coupling a second pump outlet to the second tank for supplying fluid to the second tank from a fluid source,
- (f) starting a supply of fluid to the second pump outlet,
- (g) de-activating the supply of fluid to the first pump outlet when the first level sensor senses fluid,
- (h) transmitting a first signal when the supply of fluid to the first pump outlet is de-activated,
- (i) de-activating the supply of fluid to the second pump outlet when the second level sensor senses fluid, and
- (j) transmitting a second signal when the supply of fluid to the second pump outlet is de-activated.