



HU000033432T2

(19) **HU**(11) Lajstromszám: **E 033 432**(13) **T2****MAGYARORSZÁG****Szellemi Tulajdon Nemzeti Hivatala**

EURÓPAI SZABADALOM SZÖVEGÉNEK FORDÍTÁSA

(21) Magyar ügyszám: **E 10 290320**(51) Int. Cl.: **E03F 5/22**

(2006.01)

(22) A bejelentés napja: **2010. 06. 11.**

(96) Az európai bejelentés bejelentési száma:

EP 20100290320

(97) Az európai bejelentés közzétételi adatai:

EP 2281958 A1 **2011. 02. 09.**

(97) Az európai szabadalom megadásának meghirdetési adatai:

EP 2281958 B1 **2017. 05. 31.**

(30) Elsőbbségi adatok:

0903244**2009. 07. 02.****FR**

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Szennyvízkiemelő állomás

Az európai szabadalom ellen, megadásának az Európai Szabadalmi Közlönyben való meghirdetésétől számított kilenc hónapon belül, felszólalást lehet benyújtani az Európai Szabadalmi Hivatalnál. (Európai Szabadalmi Egyezmény 99. cikk(1))

A fordítást a szabadalmas az 1995. évi XXXIII. törvény 84/H. §-a szerint nyújtotta be. A fordítás tartalmi helyességét a Szellemi Tulajdon Nemzeti Hivatala nem vizsgálta.

WASTEWATER LIFTING STATION

In lifting stations equipped with motor pumps one regularly finds detection accessories that serve to manage the correct function of the unit (level regulators, sensors, etc.).

These accessories are installed:

- in the pendular version with a fixing point on the electric cable on the upper part and held in place on the lower part by a mass installed directly on the cable (sensitive to the flow of liquid and to the interweaving of the cables),
- in the version on a fixed support, operations to replace faulty accessories are made difficult because the tanks are in use, and so are filled with water, and one often has to call upon an outside company to drain them before any operation, increasing the cost of the operation, and one still has to access the defective part by going down into the contaminated tank (presence of gas, rubbish, lack of space for handling, associated with danger for the person involved). A lifting station according to the preamble to Claim 1 is known from document US 2006/228222.

The invention relates to a wastewater lifting station that makes it possible to clean, to change or to check a level detector without an operator having to go down into the tank. The detector can be replaced while the tank is filled with water.

The wastewater lifting station according to the invention is defined in Claim 1. Other improvements are defined in the sub-claims.

In order to remove the level detector it is now sufficient to remove from the stud the tube to which the level detector is fixed without having to go down into the tank.

By physically separating the cover from the pump, the tube and the accessories, operations are performed on small assemblies which are easy to manipulate, contrary to US 2006/0228222 where they form a one-piece assembly, as in US 4886426.

In order to prevent a long tube from having at the top an excessively large displacement which may be an obstacle to it being grasped with ease, it is good to provide a lock element for the top of the tube fitted on the internal face of the tank. In order to remove the level detector that one wishes to replace, the top of the tube is unlocked and it is removed. However, during the operation of the lifting station the tube is kept well in place, both at the bottom by the stud on which it is placed or in which it is placed, and at the top by the lock element in which it is locked.

The stud is tubular when the tube is placed in the stud. When the tube is placed on the stud, the stud may be full. When the tank is made of a plastic material, it is preferable for the stud to be moulded integrally with the tank. When the tank is made of concrete, the stud is fixed on the upper face of the bottom of the tank.

The top of the tank is formed by a removable cover which is located above the motor pump unit so that the latter can be removed. The cover is independent of the motor pump unit as well as of any other installation element which are themselves independent of one another with the exception of floats suspended on the tube. The top of the tank is formed all around the removable cover by a fixed part located above the tube. The latter is arranged such that it can be reached by passing one's hand through the opening that is exposed by removing

the cover. The top of the tube can thus be fixed easily to the top of the tank while remaining accessible if it has to be lifted.

In order to make it possible to replace the tube easily in a tank filled with cloudy water after it has been removed from the tank, a guide cable is provided that is fixed to the bottom of the tank, passing from the bottom to the top of the tank parallel to the tube and onto which a guide ring is threaded, fixed in the bottom part of the tube. In order to reposition the tube and to place it correctly on the stud, the tube and the ring guided by the cable are moved down such that the bottom end of the tube, guided by the ring sliding over the cable, automatically moves opposite the stud and is placed here.

In order to facilitate the introduction of the cable into the ring without having to dismantle the cable, the ring is broken. Two parts of the ring overlap, but leave between them an opening by means of which one can introduce the cable into the ring.

In the attached drawings, given purely as an example:

Figure 1 is a sectional view according to a vertical plane of a wastewater lifting station according to the invention, whereas

Figure 2 is a top view.

The station shown in the figures comprises a tank that has a bottom 1 and a top composed of a cover 2 and a fixed part 3 that surrounds the cover. Resting on the upper face of the bottom 1 is a support 4 for a motor pump unit 5 which is not fixed to the cover 2 and which has suction 6 and a discharge pipe on the outside of the tank which is symbolised by an arrow.

A full stud 7, integrally moulded from plastic material with the tank, stands on the upper face of the bottom 1, a tube 8 that is independent of the cover being placed on the stud and said stud extending upwards to a level that is higher than the maximum filling level of the tank. This maximum tank filling level is detected by an alert level detector 9 which is suspended by an electrical cable 10 on the tube 8 by means of a collar 11. In the same way, another operating level detector 12 and a third stop level detector 13 are suspended on the tube 8.

Fixed on the lower face of the fixed part 3 of the top of the tank is a lock element 14 made in the shape of an inverted U. The tube 8 is perpendicular to the lock element 14 and locks here from the top.

Parallel to the tube 8 and close to it there is stretched on the inside of the tank a guide cable 15 in which is threaded a broken ring 16 similarly to a key ring.

The wastewater lifting station works as follows.

In order to replace one of the floats 9, 12, 13 which is clogged up or otherwise deficient, the cover 2 is removed, the top of the tube 8 is unlocked from the lock element 14 and the tube 8 is removed by removing it from the stud 7 and by passing it through the opening that is exposed by removing the cover 2. The faulty detector 9, 12 or 13 is replaced or cleaned. The tube 8 is put back in position with the aid of the ring 16 guided by the cable 15, also easily placing the tube 8 on the stud 7, even if the water contained in the tank is cloudy.

SZENNYVÍZKIEMELŐ ÁLLOMÁS

SZABADALMI IGÉNYPONTOK

1. Szennyvízkiemelő állomás, amely tartalmaz egy tartály (1, 2), amelynek eltávolítható fedele (2) van, egy motoros szivattyúegységet (5), amely a tartályban van elrendezve és nincs a fedélhez (2) rögzítve, valamint legalább egy, a tartályban elrendezett szintérzékelőt (9, 12, 13), azzal jellemezve, hogy
 - a tartály aljának (1) felső felületén egy csomópont (7) van kialakítva,
 - ahol az említett csomópontban vagy csomópontban (7) egy függőleges cső (8) van elhelyezve, amely felfelé halad legalább egy olyan karig, amely a tartály maximális töltöttségi szintjénél magasabban helyezkedik el, és a karos érzékelő (9, 12, 13) fel van függesztve a csőre (8), és
 - egy vezető huzal (15), amely a tartály aljához (1) van rögzítve és a tartály aljától (1) a tartály tetejéig halad a csővel párhuzamosan, és amelyre egy, a cső alsó részéhez rögzített vezetőgyűrű (16) van ráfűzve.
2. Az 1. igénypont szerinti állomás, azzal jellemezve, hogy a cső (8) nincs rögzítve a fedélhez (2).
3. Az 1. vagy 2. igénypont szerinti állomás, azzal jellemezve, hogy a tartály belső oldalán rögzített cső (8) tetejéhez tartozó reteszelő elemet (14) tartalmaz.
4. Az 1., 2. vagy 3. igénypont szerinti állomás, azzal jellemezve, hogy a tartály teteje egy, a motoros szivattyúegység (5) felett lévő eltávolítható fedélként (2) és a cső (8) felett elhelyezkedő, rögzített alkatrészként (3) van kialakítva, amelyhez kézzel hozzá lehet fűzni a fedél (2) eltávolításakor létrejövő nyíláson keresztül.
5. A 4. igénypont szerinti állomás, azzal jellemezve, hogy a gyűrű meg van szakítva.





Figure 1

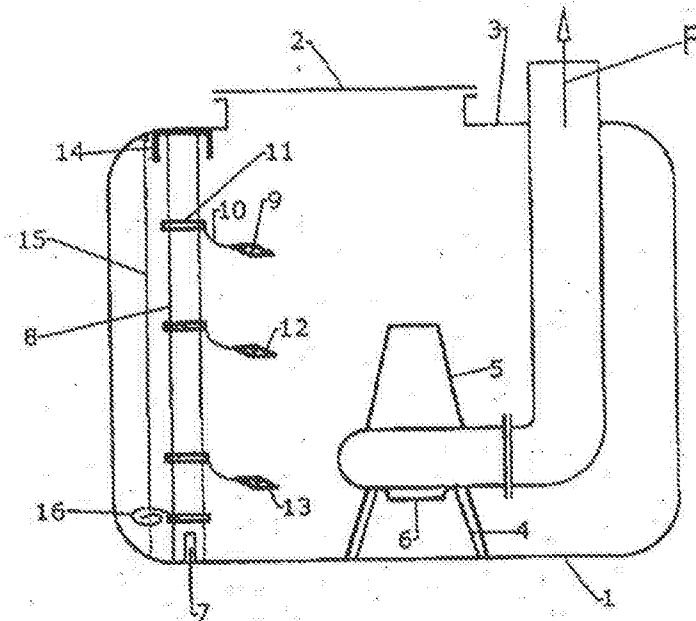


Figure 2.

