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(54) **MULTI-SERVICE PEDESTAL**

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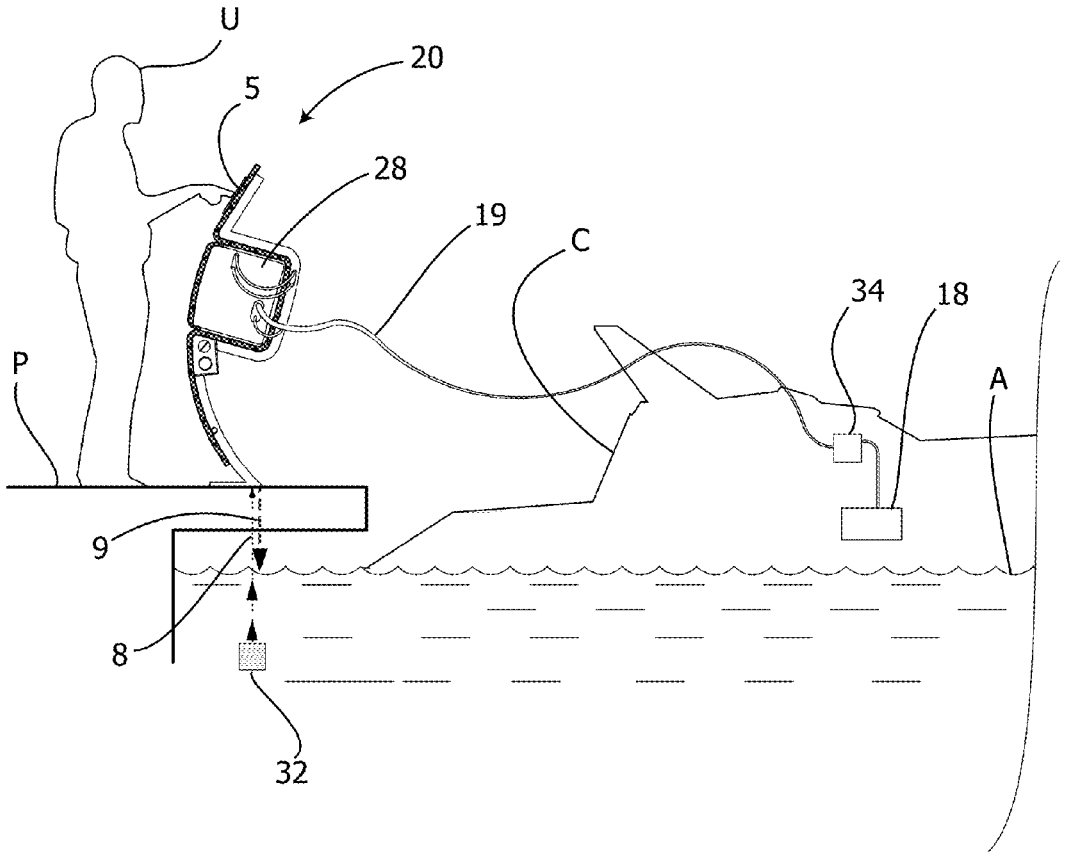
(57) **ABSTRACT**

A multi-service pedestal (**1**) in particular for ports and marinas, being provided with a support structure (**10**) and adapted to provide a variety of utilities, such as electricity, tap water, telephone and television connections, to a cruiser moored at a pier or quay, further has a central conditioning apparatus (**6**) which is located in the multi-service pedestal (**1**) and is adapted to be connected to a terminal unit (**18**) onboard the moored cruiser for conditioning the air within it through the heat exchange with a conditioning liquid. The support structure (**10**) has a front side (**11**) on which a computer screen (**5**) is installed.



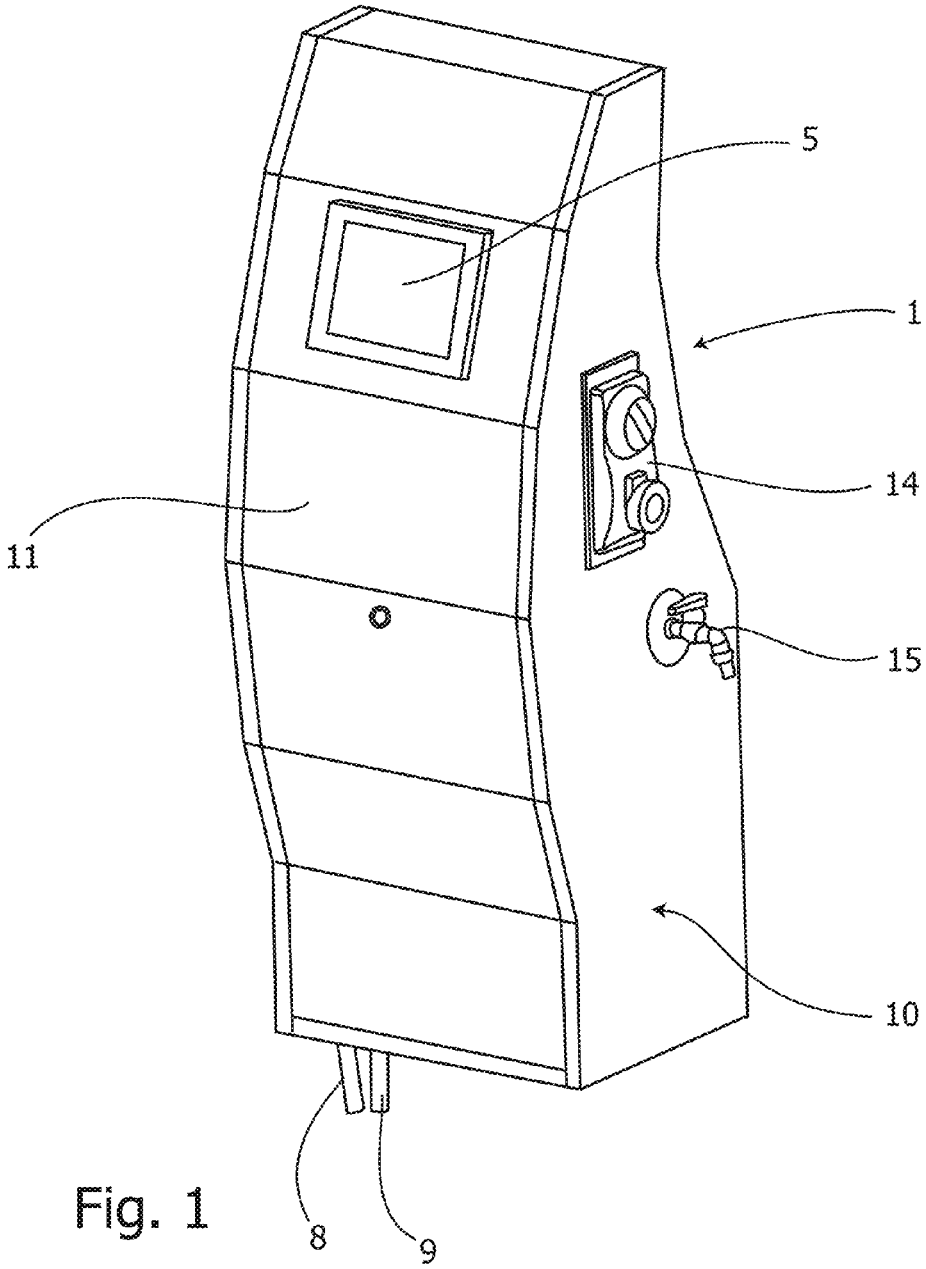


Fig. 1

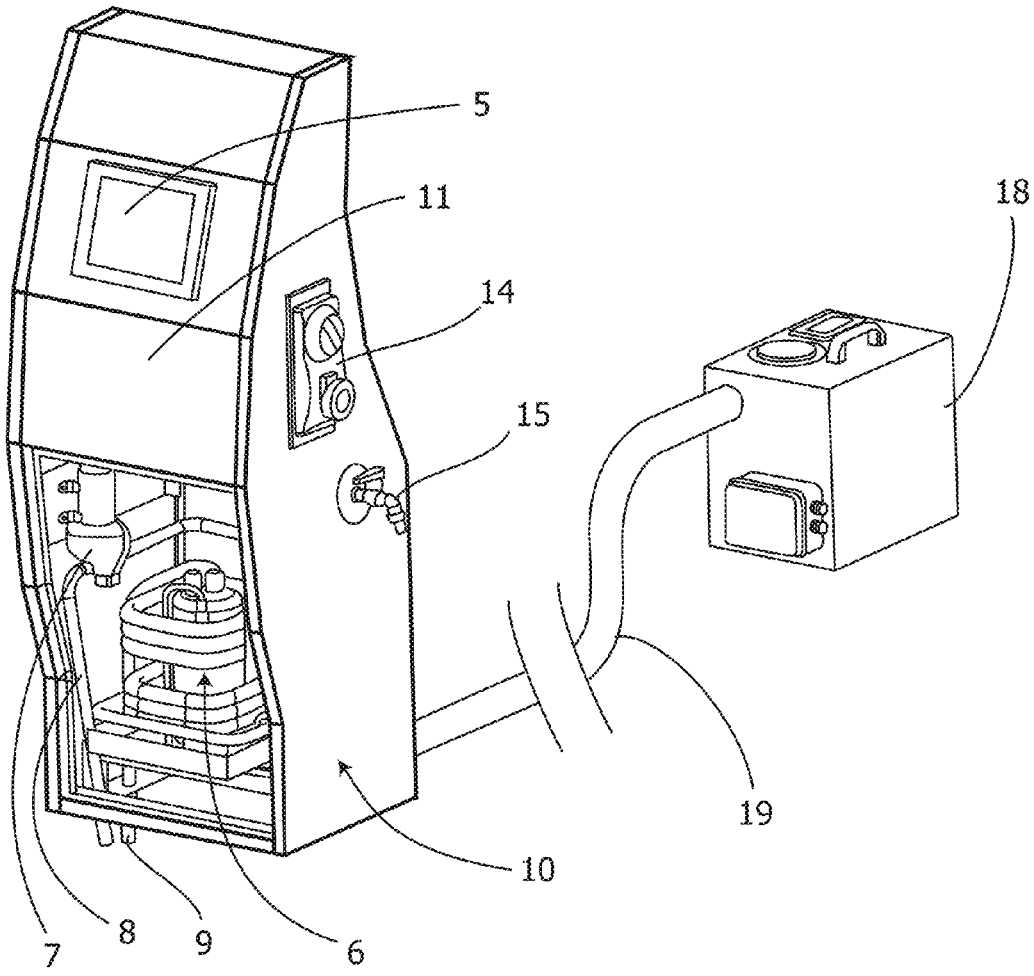


Fig. 2

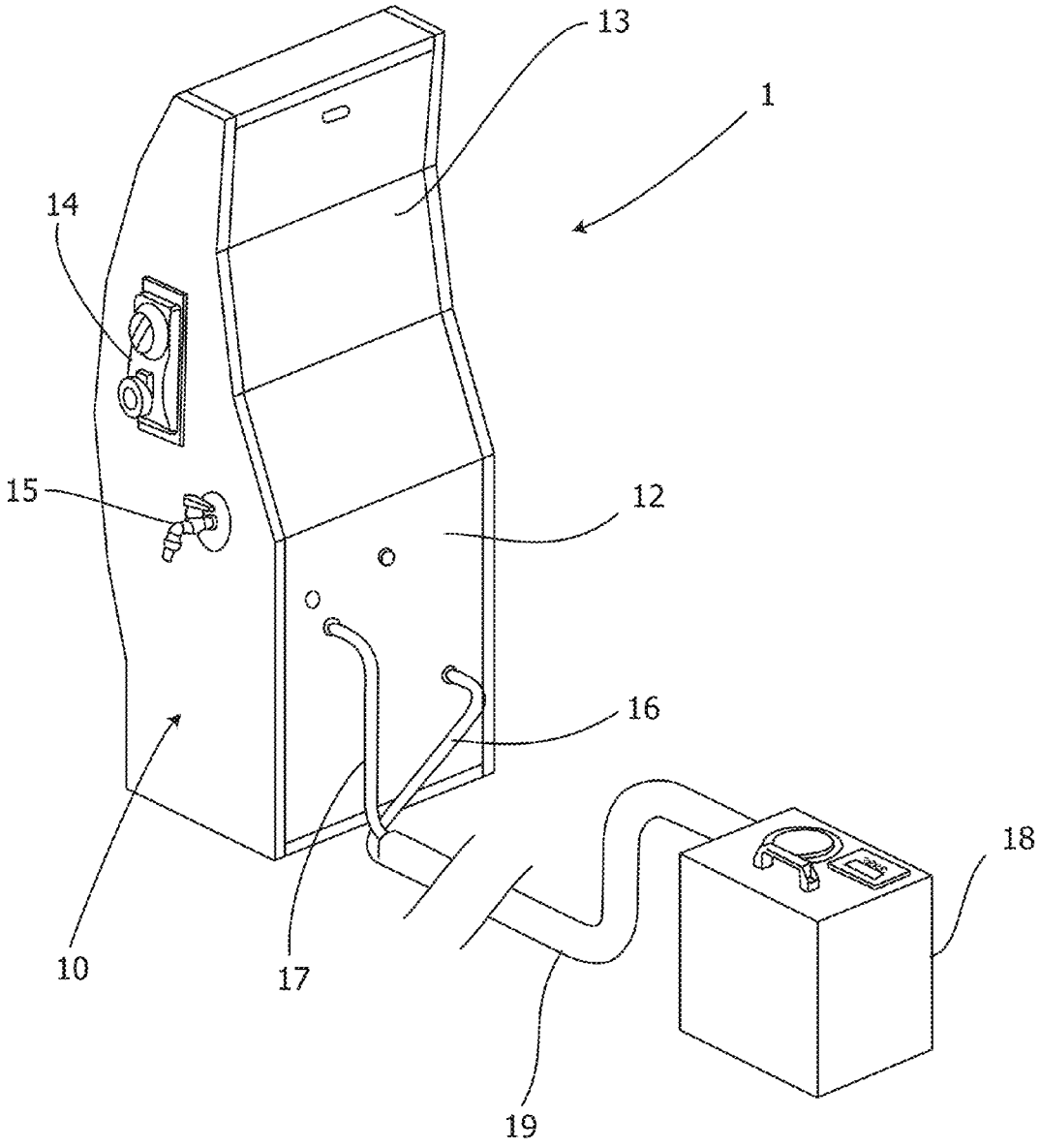


Fig. 3

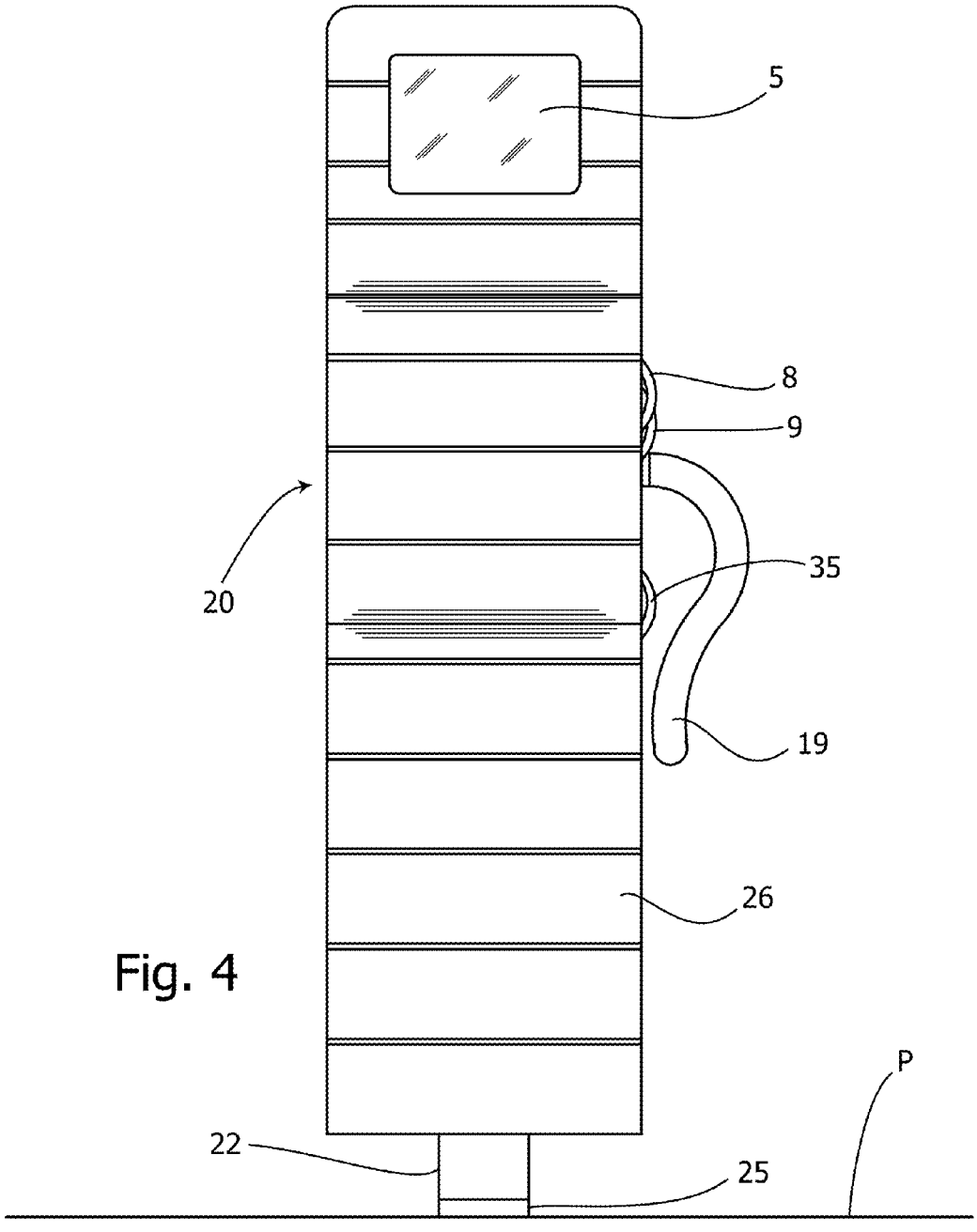
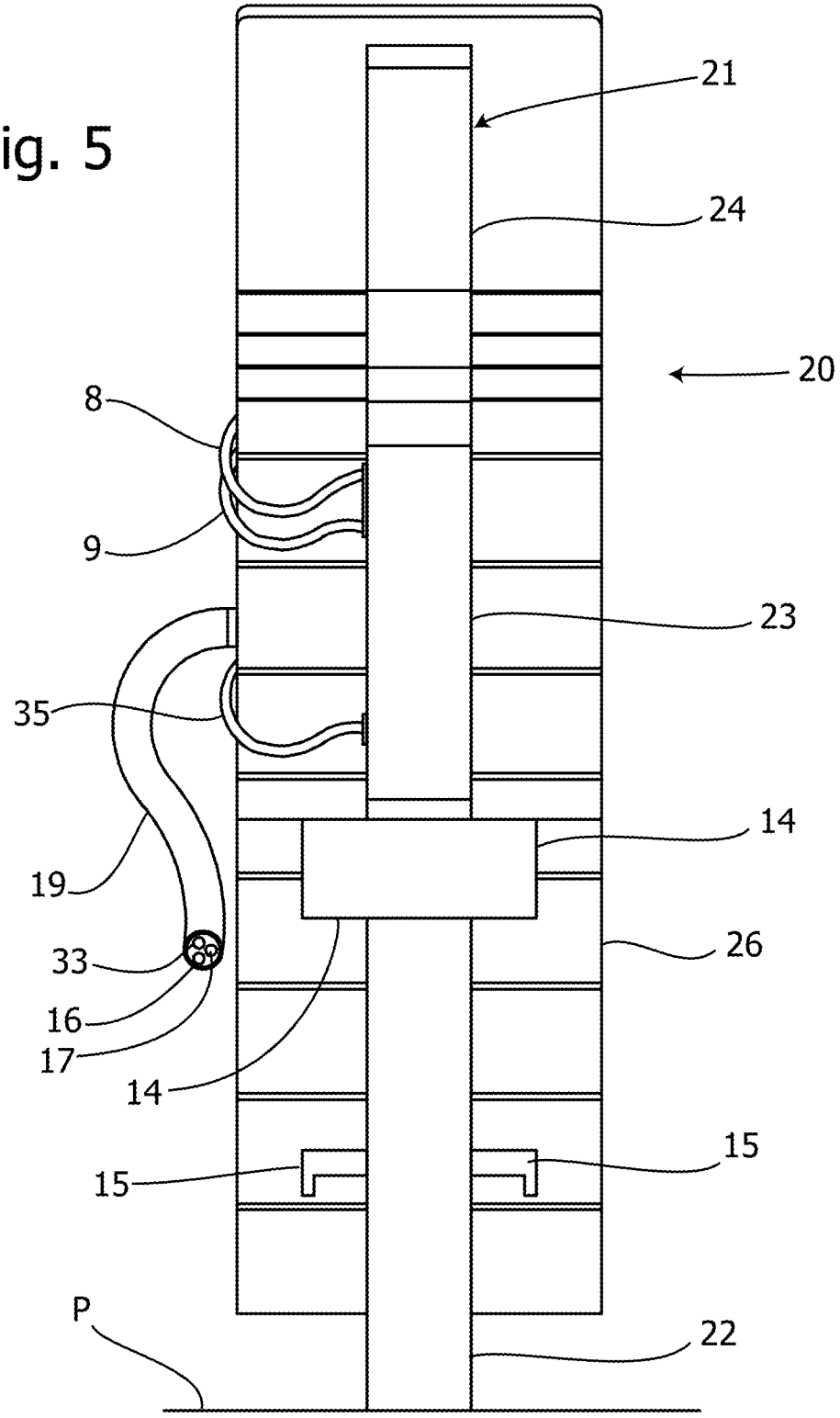


Fig. 4

Fig. 5



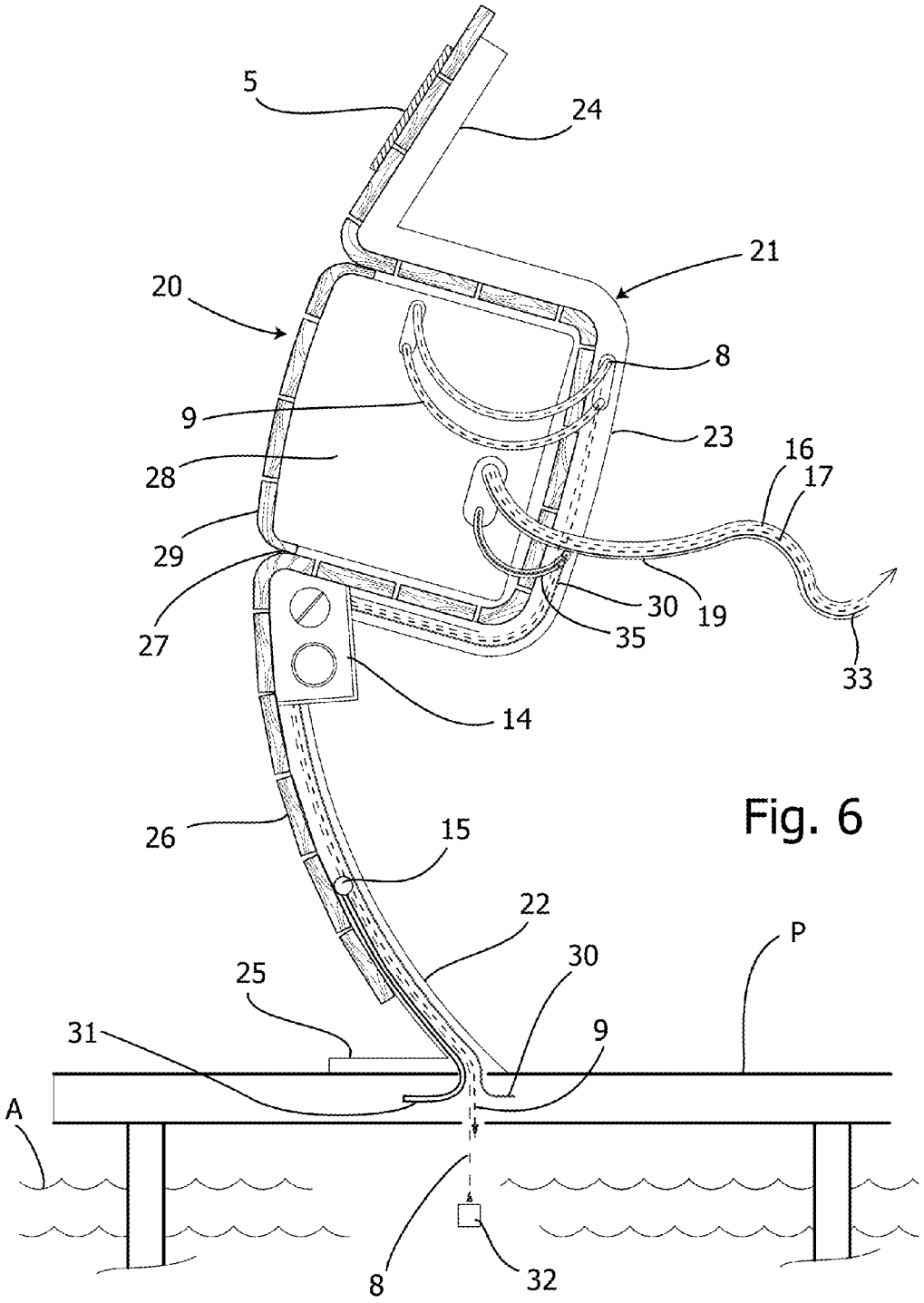


Fig. 6

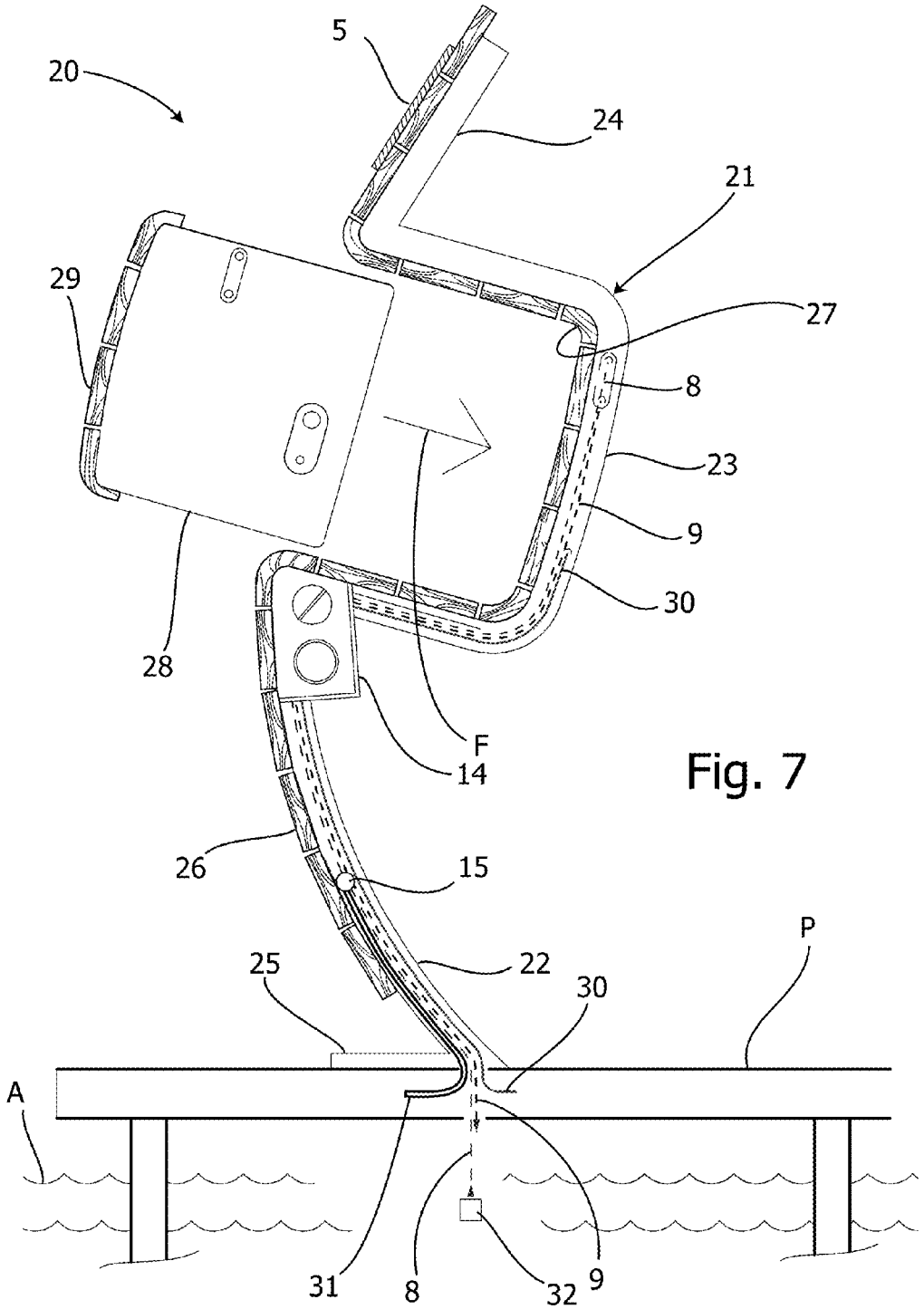


Fig. 7

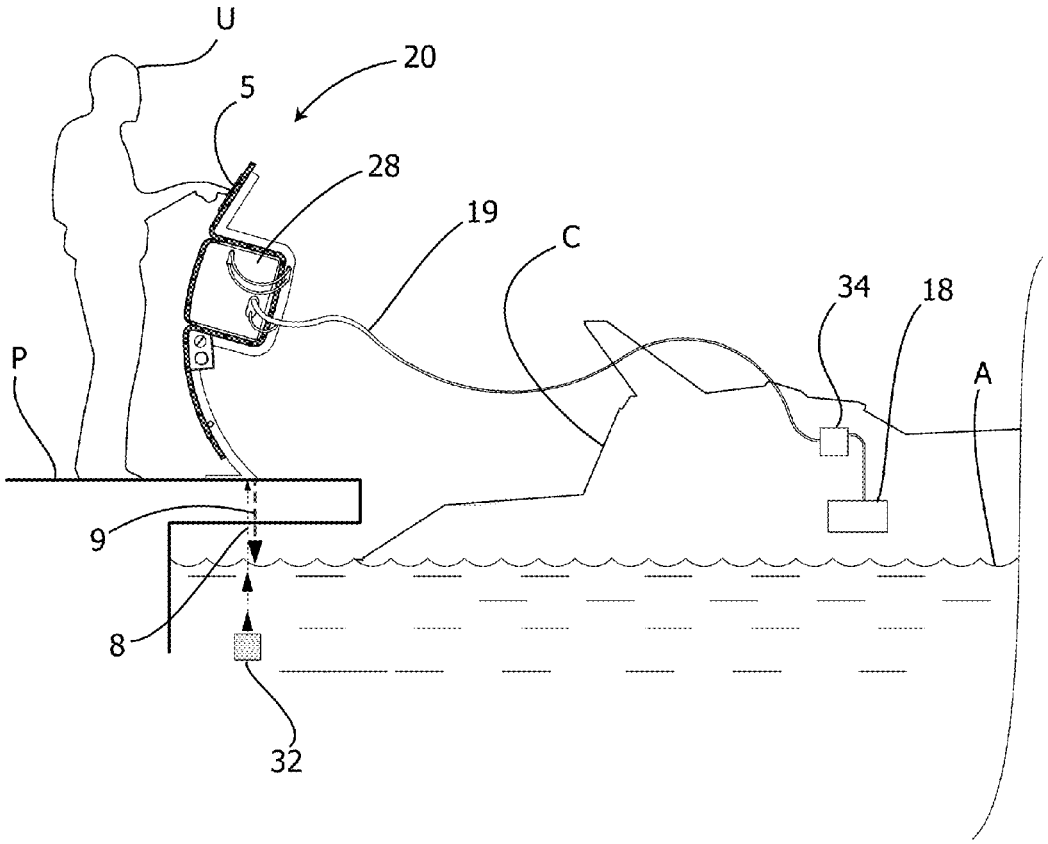


Fig. 8

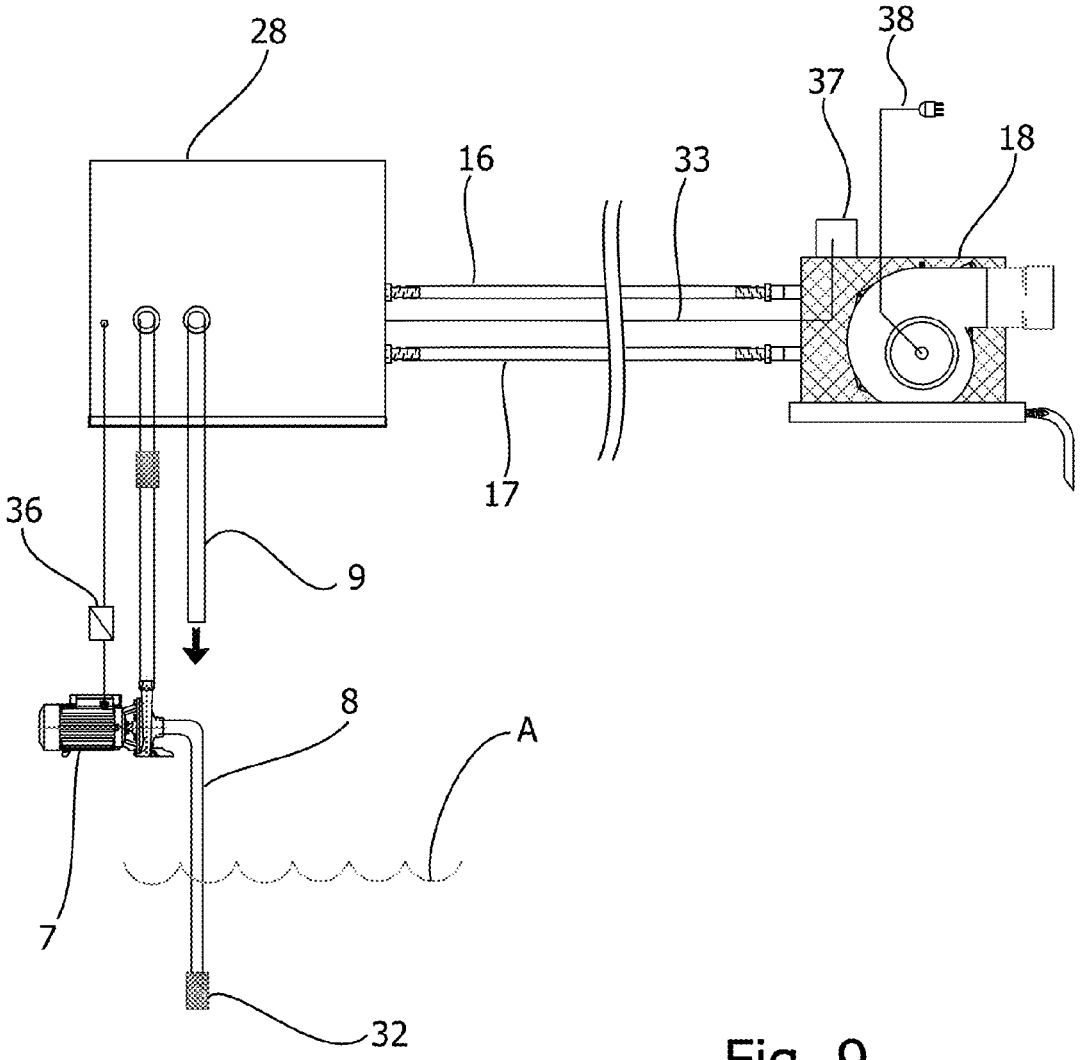


Fig. 9

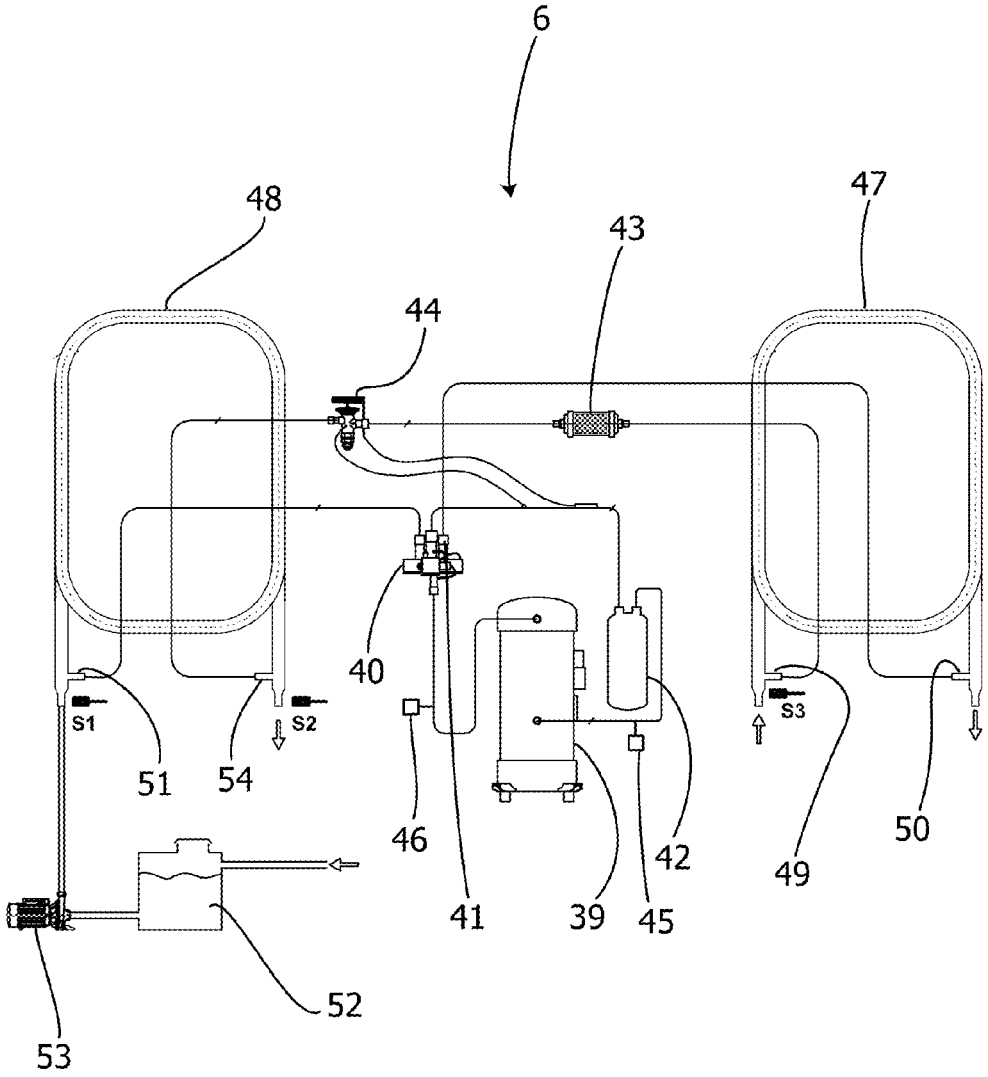


Fig. 10

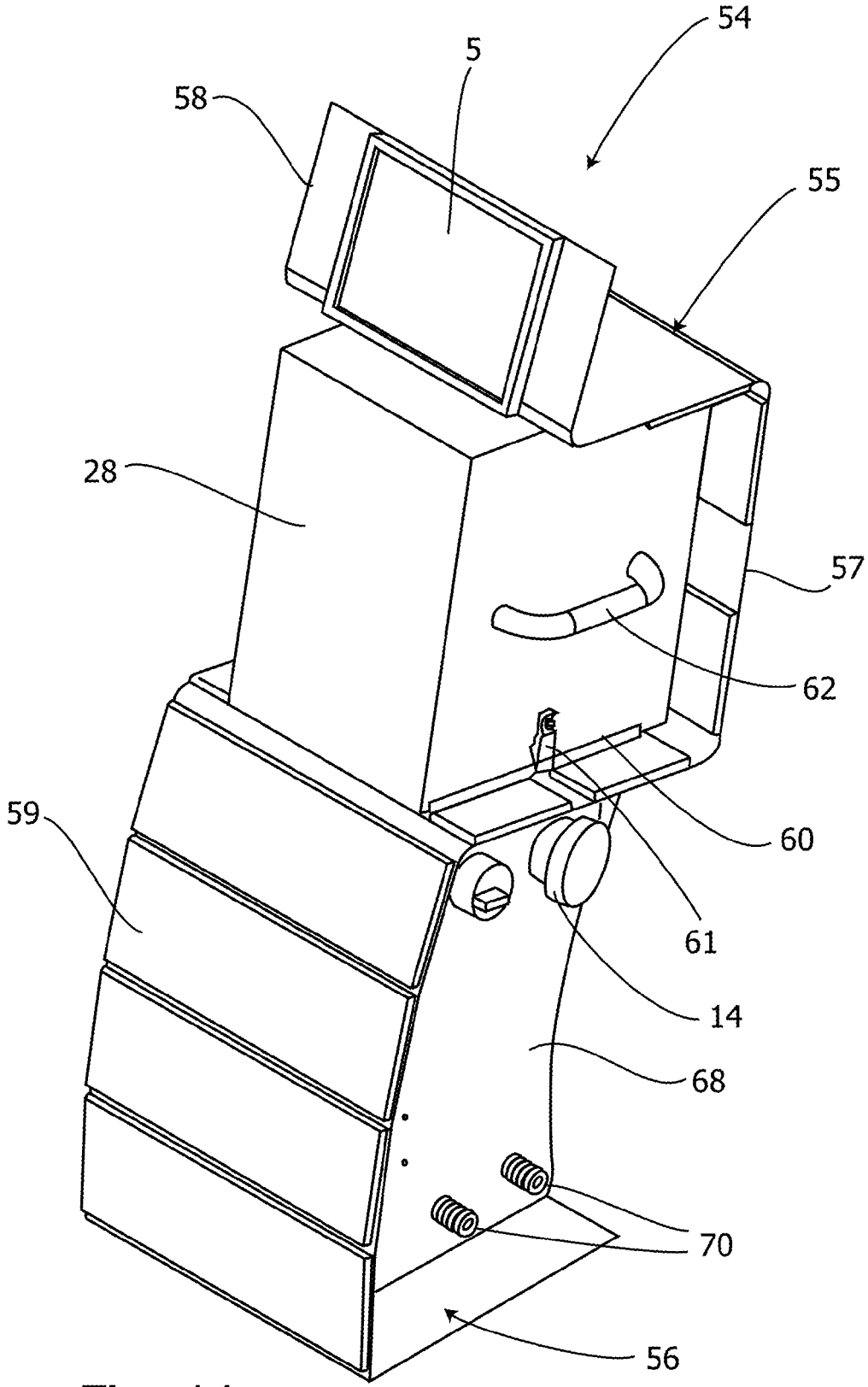


Fig. 11

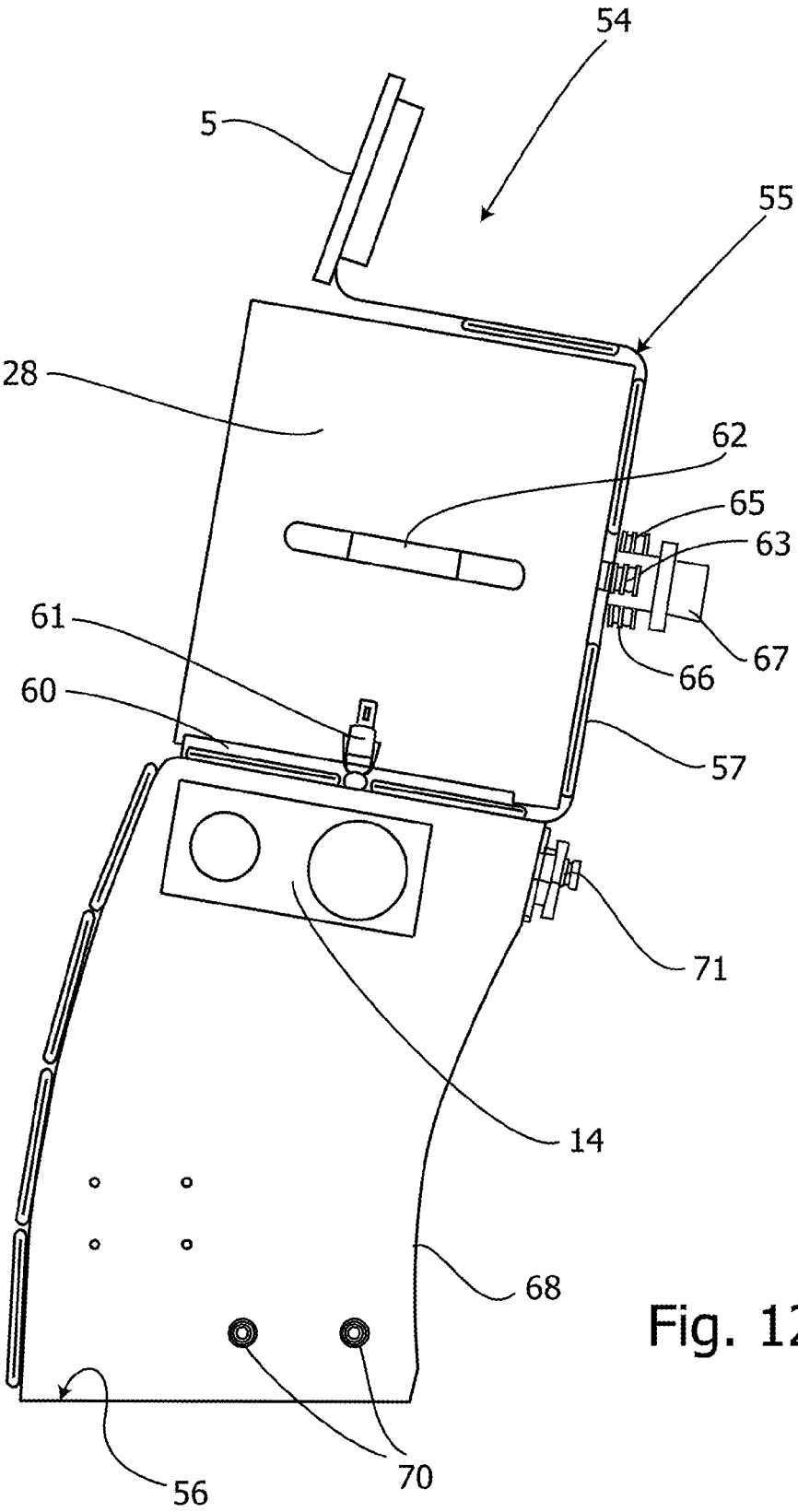


Fig. 12

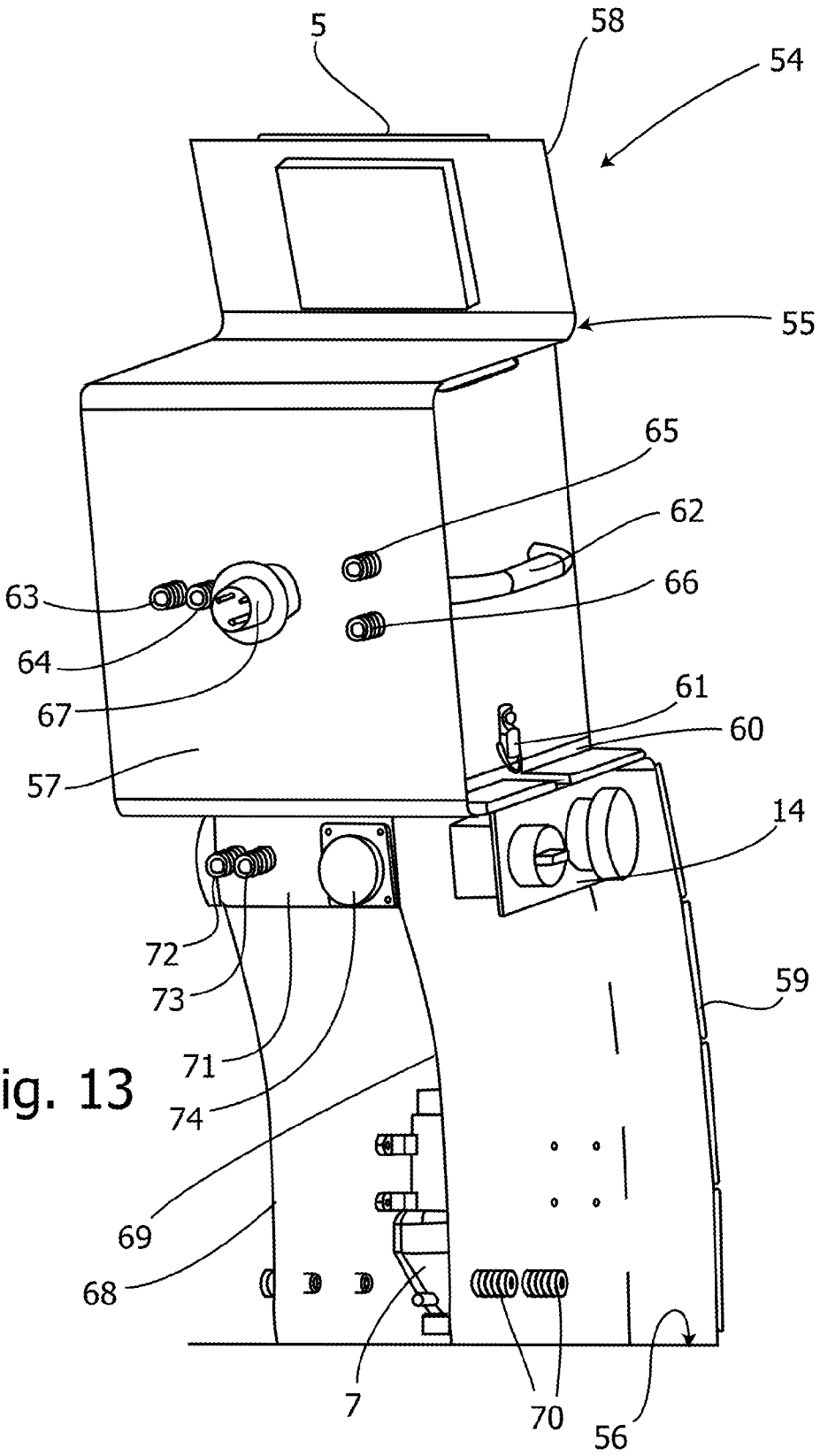


Fig. 13

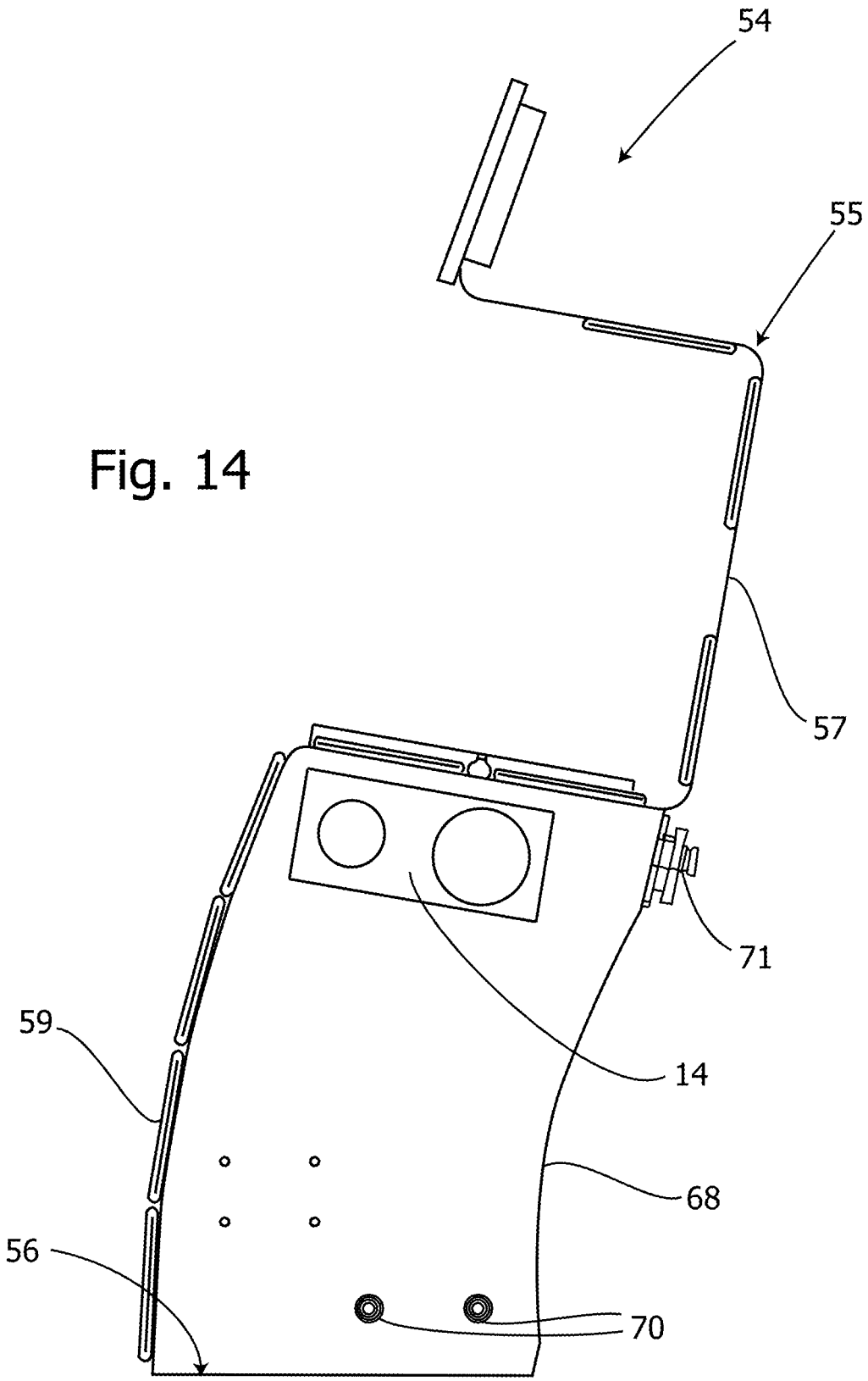


Fig. 14

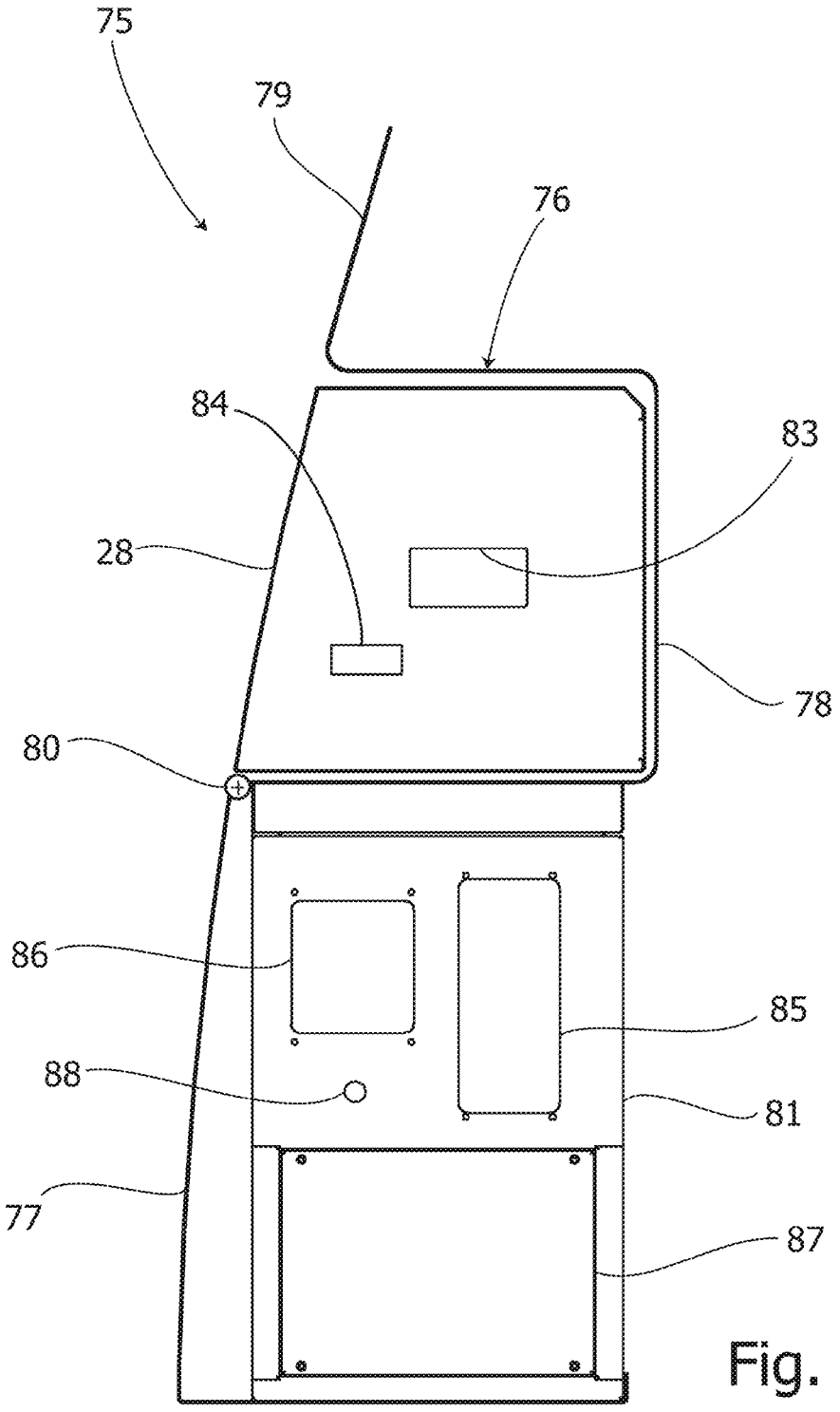


Fig. 15

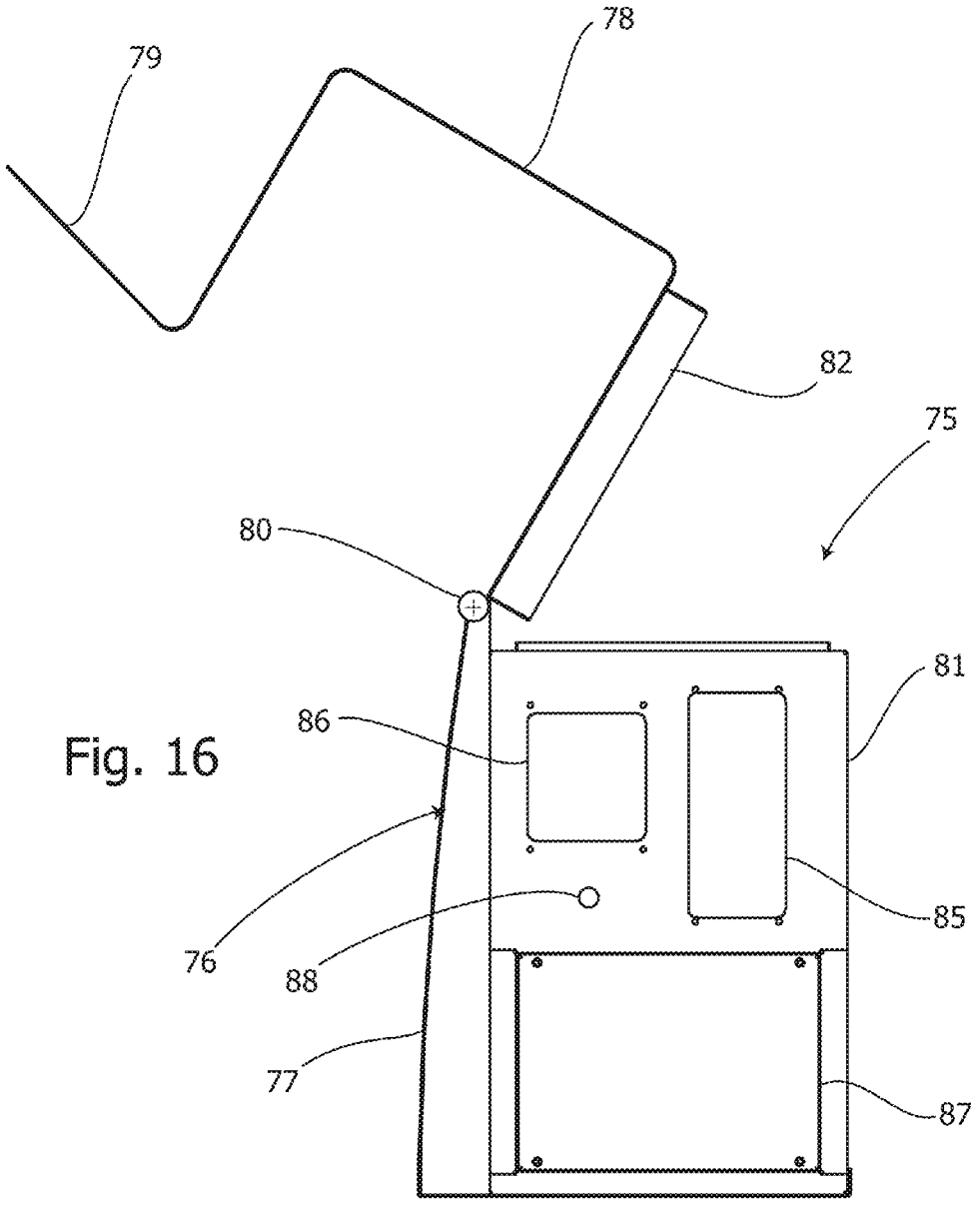


Fig. 16

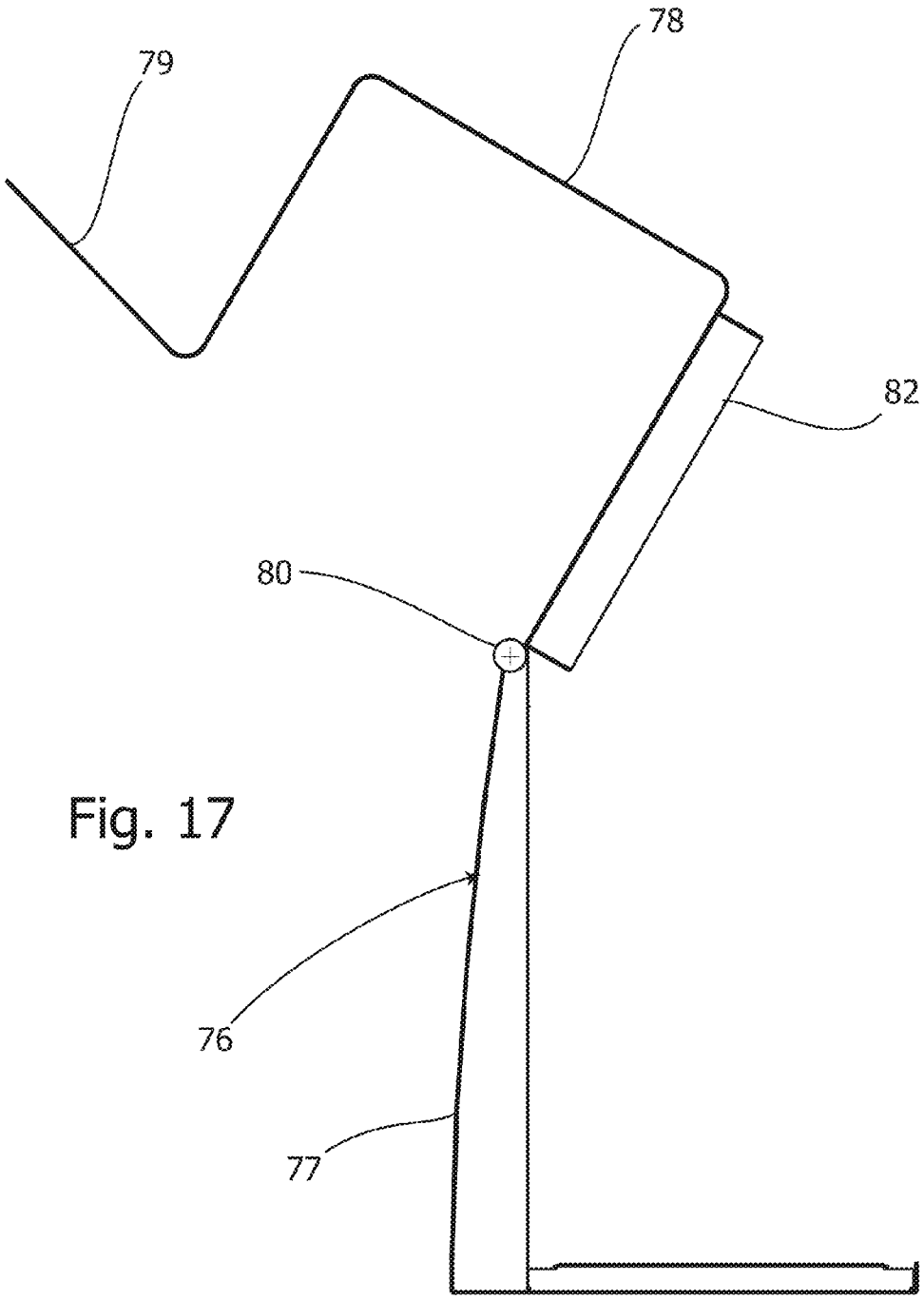


Fig. 17

MULTI-SERVICE PEDESTAL

TECHNICAL FIELD

[0001] The present invention relates to a multi-service pedestal, in particular for ports and marinas, that is able to provide a variety of utilities such as electricity, tap water, television and telephone services to moored vessels, cabin cruisers and ships, generally called cruisers in the following. However, the pedestal according to the invention can be used also in camping areas for recreational vehicles and temporary shelters.

BACKGROUND ART

[0002] Small cruisers have commonly no air conditioning system within their cabin because of encumbrance and cost of maintenance thereof. The problem of air conditioning is particularly serious when the cruiser is in an area sheltered from the wind, e.g. a port or marina, especially when the weather is hot. Sometimes, as in lake areas, it is not possible to keep open portholes, hatches and windows during summer for ventilation, which allows mosquitoes and other annoying insects to come in.

[0003] Stoves and portable air conditioners are often used for the air conditioning within small cruisers. However, they consume a lot of electrical power and, furthermore, can cause fire as a result of their possible overheating.

[0004] U.S. Pat. No. 5,848,536 discloses a marine air conditioner, which could also be used as a heat pump. There is stated that "while the marine air conditioner according to the invention is particularly effective for boats in the twenty five foot range, the basic design according to the invention is highly advantageous for almost any size boat . . . the air conditioner according to the invention has a very low volume to cooling capacity ratio, and high efficiency". The conditioner is associated with a cooling water pump whose inlet conduit passes through the hull of the boat for sucking the cooling water for the heat exchange with the condenser of the air conditioner.

[0005] Even if the air conditioner described in U.S. Pat. No. 5,848,536 is particularly developed for the purpose, however, the encumbrance and maintenance drawbacks above mentioned as well as cost and noise of the cooling water suction pump remain the same. Furthermore, the installation of the air conditioner involves, as mentioned above, the drilling of the hull below the waterline that cause various problems, including psychological ones, related to this need.

[0006] A marine system of this kind, which is called hydronic as it uses the circulation of water for the transfer of thermal power, is produced by Thermowell, Lecce, Italy. A central conditioning apparatus, such as a heat pump or a refrigerator, is placed in a room of a vessel, and its heat exchanger is cooled with sea water by a suction pump. The central conditioning apparatus is connected through a delivery pipe and a return pipe to a fan coil remotely situated on the same vessel for air conditioning.

[0007] U.S. Pat. No. 4,967,569 discloses a portable air-conditioning unit to be placed on a boat deck. The portable air-conditioning unit is enclosed in a shell divided into two compartments internally. A first compartment, containing a cooling coil and a fan, communicates only with a boat cabin to be conditioned through a hatch; the first compartment sucks internal air by a suction duct, cools said air and feeds back it into the boat cabin by a delivery duct. The second compartment is in contact with external air that cools a condenser of the air-conditioning unit.

[0008] It is understood that this air-conditioning unit needs to be transported onto the deck of the boat to be refrigerated and positioned so as to be adapted to its hatch. Besides the drawback arising from the transport of the air-conditioning unit and the adjustment of its position in situations that are different from boat to boat, there is the problem of a poor performance due to the fact that the heat exchange takes place in the air conditioner only with the air.

SUMMARY OF THE INVENTION

[0009] The present invention aims to overcome the above mentioned drawbacks associated with the installation of a fixed air-conditioning system on board of a vessel, but also with the transport of an air conditioner and the adjustment thereof to the hatch or other opening of a cabin to be conditioned.

[0010] A main purpose of the present invention is to provide an air conditioning within a moored cruiser without the need to install a central conditioning apparatus on board, i.e. the main part of a conditioning system for heating and cooling the air.

[0011] To achieve the above mentioned purpose, the present invention, as defined in claim **1** attached to this description, provides a multi-service pedestal, in particular for a quay of a port or marina, pedestal that has a support structure and is adapted to provide various utilities, such as electricity, tap water, telephone and television connections, to a cruiser moored at the quay, further comprising a central conditioning apparatus which is situated in the multi-service pedestal and is able to be connected to a terminal unit located on board the moored cruiser for conditioning indoor air.

[0012] Advantageously, the invention provides users with a simple, safe and cheap air conditioning and heating system. A user shall only have to accommodate on board a small fan powered terminal unit connected to the central conditioning apparatus for cooling or heating that is on a quay or pier, through a hose that functions as a sheath containing two pipes, namely a delivery pipe and a return pipe, which connect the central conditioning apparatus to the terminal unit; the pipes allow the circulation of chilled or heated liquid. An electric cable for the thermostatic control of the system is also contained in the aforesaid hose.

[0013] Various embodiments of the multi-service pedestal according to the present invention are defined in the claims dependent on claim **1**.

[0014] According to a first embodiment of the invention, the pedestal has a hollow load bearing structure that is mounted on the quay or pier and is electrically powered with a cable that enters the support structure and is connected to industrial sockets with interlock, in addition to an electrical socket for supplying the central conditioning apparatus.

[0015] Passing through the hollow structure, which can be made of steel, is a tube from the water mains for water outlets controlled by taps.

[0016] The central conditioning apparatus is connected by hoses and quick couplings to two tubes that run within the load bearing structure, exit the base thereof and continue through the quay or pier or along them until they reach the water surface. One of the two tubes is a suction tube, which, suitably protected by a filter, sucks water. The other one, after having served a heat exchanger, discharges the water. A pump located in the pedestal is provided in the suction tube.

[0017] Housed in the upper part of the pedestal, is a LCD or LED screen, duly inclined to allow a best vision. The LCD or LED screen, via a cable connection or wi-fi, allows the user to take advantage of interactive promotions for dedicated user services that a manager decides to offer, as well as an advertising schedule.

[0018] In a second embodiment of the invention, the support structure of the pedestal has profile, preferably of stainless steel, in a form of an omega rotated upwards, having a lower part connected by a support plate to the ground, an upper part in which a computer screen is placed frontally, and a central recess intended to removably receive said central conditioning apparatus.

[0019] The omega-shaped profile of the support structure according to the second embodiment of the invention is somewhat narrow and is coated with slats protruding from both sides of the support structure. The slats are made of wood or composite material similar to those of the decking of the pier or quay to which it is attached.

[0020] The central conditioning apparatus is encased in a housing made of material resistant to corrosion and is coated with the same slats of composite material or wood that cover the support structure that hosts it. So doing, an aesthetic continuity is obtained when both the central conditioning apparatus is inserted in the central recess of the support structure, and it is not.

[0021] Even in the second embodiment the central conditioning apparatus is connected to the fan powered terminal unit, which is enclosed in a durable, small, possibly isolated acoustically container. It includes a finned heat exchanger, a centrifugal fan and inlet grille.

[0022] In a third embodiment of the invention, the support structure has a squared S-shaped profile, extending upward in a rearward inclined portion to receive a computer screen, the squared S-shaped profile comprising a C-shaped recess intended to removably receive said central conditioning apparatus and a lower part in the form of an inverted L that is adapted to receive a permanent housing for utilities.

[0023] In a fourth embodiment of the invention, the support structure has a squared S-shaped profile, extending upward in a rearward inclined portion to receive the screen of a computer, the squared S-shaped profile comprising a C-shaped recess intended to removably receive said central conditioning apparatus and a lower part in the form of an inverted L. The C-shaped recess is pivoted by means of cylindrical hinges on the lower part in the form of an inverted L that is intended to removably receive a housing for utilities. Such housing is likely to be removed from the multi-service pedestal by turning upwards the C-shaped recess, after said central conditioning apparatus has been removed from it.

[0024] Advantages of the invention are evident for both the manager of the pedestals on the quay and the users. A main advantage lies in its function of offering a comfortable temperature within a cruiser; other advantages include reduced size of the fan powered terminal unit, low noise due to the only presence of a fan in the room to be conditioned, easy maintenance, prevention of vandalism, theft or tampering, especially in the embodiments in which the housing of both the central conditioning apparatus and the utilities is removable from the support structure of the pedestal. Other advantages derive from the modularity of the multi-service pedestal according to the invention, which allows the manager to purchase the pedestal from the manufacturer thereof as desired, and to maintain it easily thanks to the removable housing of central conditioning apparatus and utilities. A decisive factor is the reliability in use: there is no need of heaters, portable air conditioners, or stationary air conditioning systems on board, with a result of greatly reducing the risk of fire due to overheating of electrical equipment, and of cruiser sinking due to a malfunction of the sea cocks. In general the advantage of the pedestal according to the invention is to provide a service to those who can not or do not want to bear the cost of purchasing a stationary air conditioning system on board or just do not have the sufficient space on their cruiser. Finally, the pedestal allows a reduced power consume with respect to heaters and portable air conditioners.

BRIEF DESCRIPTION OF DRAWINGS

[0025] Further features and advantages of the invention will become apparent from the description of embodiments of the multi-service pedestal illustrated by way of an indicative and not limiting example in the accompanying drawings in which:

[0026] FIG. **1** is a front perspective view of a first embodiment of a multi-service pedestal according to the present invention;

[0027] FIG. **2** is a front perspective view of the multi-service pedestal in FIG. **1**, the pedestal being partially open and rear connected to a terminal unit according to the present invention;

[0028] FIG. **3** is a rear perspective view of the multi-service pedestal in FIG. **1**, the pedestal being rear connected to the terminal unit according to the present invention;

[0029] FIG. **4** is a front view of a second embodiment of a multi-service pedestal according to the present invention;

[0030] FIG. **5** is a rear view of the multi-service pedestal in FIG. **4**;

[0031] FIG. **6** is a side view in an enlarged scale of the multi-service pedestal in FIG. **4**;

[0032] FIG. **7** is a side view in an enlarged scale of the multi-service pedestal in FIG. **4**, when a central conditioning apparatus is installed;

[0033] FIG. **8** is a schematic side view of the second embodiment of a multi-service pedestal according to the present invention installed on a pier and rear connected to the terminal unit onboard a moored cruiser;

[0034] FIG. **9** is a diagram of an air-conditioning system of the multi-service pedestal according to the present invention;

[0035] FIG. **10** is a schematic representation of the components of the central conditioning apparatus;

[0036] FIG. **11** is a front perspective view of a third embodiment of a multi-service pedestal according to the present invention;

[0037] FIG. **12** is a side view of the multi-service pedestal in FIG. **11**;

[0038] FIG. **13** is a rear perspective view of the multi-service pedestal in FIG. **11**;

[0039] FIG. **14** is a side view of the multi-service pedestal in FIG. **11**, with the central conditioning apparatus being removed;

[0040] FIG. **15** is a schematic side view of a fourth embodiment of a multi-service pedestal according to the present invention;

[0041] FIG. **16** is a schematic side view of the multi-service pedestal in FIG. **15** without central conditioning apparatus, an upper part of the pedestal being rotated for the removal of a housing for utilities; and

[0042] FIG. **17** is a schematic side view of the multi-service pedestal in Figure **15** without central conditioning apparatus and utility housing.

DESCRIPTION OF INVENTION EMBODIMENTS

[0043] First, reference is made to FIGS. **1** to **3**, which show the only multi-service pedestal in a front perspective view, and the multi-service pedestal connected to a fan coil unit in front and rear perspective view respectively, according to a first embodiment of the present invention. The multi-service pedestal generally indicated as **1** has a hollow load bearing structure **10** extending upwards. The hollow load bearing structure **10** has a front side **11** from which a computer screen **5** protrudes upward. The hollow load bearing structure **10** is closed by panels both in front and rear. By removing the lower panels of the front side **11**, as shown in FIG. **2**, a central conditioning apparatus generally indicated as **6** becomes accessible. FIG. **3** shows the rear side **12** of the hollow load bearing structure where a door **13** openable to obtain access inside is provided. Associated to the central conditioning apparatus **6** is a suction pump **7**. Indicated as **8** and **9** are a suction tube of cooling water, which could be taken from the same water basin where a cruiser is moored, and a discharge tube respectively for discharging the cooling water to the basin after a heat exchange in an open loop heat exchanger as described later.

[0044] Provided on one or both side walls of the hollow load bearing structure **10** are an electric power socket **14** with a device of mechanical interlock and a faucet **15** for tap water.

[0045] As shown in FIG. **3**, a delivery pipe **16** for delivering a conditioning liquid to a terminal unit **18** and a return pipe **17** thereof protrude from the rear side **12** of the hollow load bearing structure, in which there is a closed loop heat exchanger of a working fluid of the central conditioning apparatus, described in detail below. The terminal unit **18** is a conventional fan coil having a conditioning liquid coil (not shown in the figure) that is connected with the delivery and return pipes **16**, **17** of the closed loop heat exchanger.

[0046] The delivery and return pipes **16**, **17** are lined with an insulating material adapted to reduce the heat exchange with the outside, and joined together with a sheath in a single hose **19**.

[0047] Reference is made now to FIGS. **4**, **5** and **6** which are a front view, a rear view, and a side view respectively, of a second embodiment of a multi-service pedestal **20** according to the present invention. In these figures the same reference numerals are used for parts identical or similar to those in the first embodiment, which is described in FIGS. **1** to **3**.

[0048] The multi-service pedestal **20** has a support structure **21** with a shaped profile in the form of omega rotated upward, having a lower part **22**, a central part **23**, and an upper part **24**. The lower part **22** is connected to a support plate **25** that is shown as mounted on a pier P in FIG. **6**. The support structure **21** is provided in front with a panel coating **26**. The frontal width of the support structure **21** is less than that of the panel coating **26**, as shown in FIG. **5**.

[0049] The upper part **24** of the support structure **21** has frontally a computer screen **5**. Thanks to the particular profile of the support structure **21**, the central part **23** has a recess **27** intended to removably receive a central conditioning apparatus located within a housing **28**, which is also frontally coated with a panel coating **29**.

[0050] The support structure **21**, which can be made with a stainless steel section with a rectangular cross-section, is internally hollow to allow the passage of utilities. In particular, electrical cables **30** for power supply to a socket **14** with mechanical interlock, and a tap water tube **31** to a faucet **15** are shown. The tap water tube **31** is connected to the water mains. The electrical cables **30** also supply the central conditioning apparatus, as shown by the tract **35** between the support structure **21** and the housing **28** of the central conditioning apparatus, and further the computer screen and other utilities not described in detail. Passing inside the support structure **21** are a suction tube **8** of cooling water, which is sucked from a water basin A, and a discharge tube **9** for discharging the cooling water to the basin after the heat exchange in an open loop heat exchanger contained within the housing **28**, which will be described later. Indicated with the same reference numerals **8** and **9** are tracts of the suction tube of cooling water and of the discharge tube respectively, in the passage between the support structure **21** and the housing **28** of the central conditioning apparatus. In particular, partially shown in FIGS. **5** and **6** are also delivery and return pipes **16**, **17** of the closed loop heat exchanger of the central conditioning apparatus. The delivery and return pipes **16**, **17** are lined with an insulating material, and joined together with a sheath in a single hose **19**. Provided inside the sheath is also a low voltage power cable **33** for a thermostat mounted, as it will be shown below, inside the cruiser where the fan coil unit is placed.

[0051] As shown in FIG. **7**, which is a side view in an enlarged scale of the multi-service pedestal in FIG. **4**, the central conditioning apparatus is removable from the support structure **21** because its housing **28** can be extracted and re-introduced into the recess **27** of the support structure **21**, after detachment of the connecting pipes and tubes and the power cable, as it will be explained in the following with reference to other embodiments. The arrow F indicates the direction of re-introduction.

[0052] Reference is made now to FIG. **8**, which is a schematic side view of the second embodiment of a multi-service pedestal **20** according to the present invention installed on a pier P and rear connected to a terminal unit **18** mounted onboard a cruiser C moored at the same pier P. The central conditioning apparatus placed inside its housing **28**, which is inserted in the multi-service pedestal **21**, sucks the cooling water from the basin A through a filter **32** and the suction tube **8** and discharges the cooling water exiting the open loop heat exchanger in the basin through the discharge tube **9**.

[0053] Furthermore, the central conditioning apparatus is connected as described above, through the single hose **19** to the terminal unit **18**, i.e. a fan coil, onboard the moored cruiser C. The hose **19** is inserted into the cruiser C through a window **34** of the same. It should be clear that a quick connect fitting to allow connection of the hose **19** can be provided in the cruiser C in order to prevent the opening of the porthole, hatch, windows and skylights and the consequent dispersion of heating or cooling. Alternatively, a passage hole of the hose **19** may be closed with a safety cap, removable only for the operation of air conditioning.

[0054] A user U is shown operating the computer screen **5**. The computer screen **5**, which may be a touch screen, can be used to receive weather and sea communications, and any other service information or advertising.

[0055] The computer screen positioned on the inclined surface to allow the best vision, via a cable connection or wi-fi,

allows the user to take advantage of an interactive service for the promotion of dedicated services, as well as an advertising schedule.

[0056] The multi-service pedestal **21**, although not shown, may also have telephone and television cables, and any other desired utility.

[0057] The power cable **30** from the floor of the pier P having variable voltage 220/380 V supplies sockets **14**, **14** placed at a sufficient distance from the floor and attached to the support structure **21**. The sockets with interlock have a protection guaranteed by a differential circuit breaker.

[0058] The tap water comes from the water mains through the tube **31** and branches into the two quick coupling faucets **15**, **15**, placed to the sides of the support structure **21**.

[0059] Housed inside the support structure **21** is the suction tube **8** that sucks the water from the basin A below the pier P or quay for the cooling of the heat exchanger of the central conditioning apparatus. The filter **32** protects the tube from obstruction. The discharge tube **9** ensures the discharge of the same water after cooling. Both tubes are connected with a quick connection on the support structure in the vicinity of the housing **28** of the central conditioning apparatus. Applied to the support structure **21** of stainless steel is the panel coating **26** of slats that are made of composite material or wood and fastened by means of screws. On top of the support structure **21** the computer screen **5** is resistant to water, UV rays, and accidental bumps. The base of the frame structure **21** can be rotated by 45° clockwise and counterclockwise, thereby facilitating the wiring of power and water utilities.

[0060] The central conditioning apparatus is within the housing **28**, which is resistant to water and dust, and covered in the front by the panel coating **29** of slats made of composite material or wood identical to the panel coating **26** that covers the front part of the multi-service pedestal **20**.

[0061] In order to illustrate in more detail the above described, reference is made to FIG. **9**, which is a diagram of the conditioning system of the multi-service pedestal according to the present invention. Also in FIG. **9** the same reference numerals of the previous figures are used. Located in the housing **28** that is placed on the multi-service pedestal **20**, is the central conditioning apparatus that will be described in greater detail in FIG. **10**, which is a schematic representation of its components. The cooling water is sucked through the filter **32** from the basin A by the suction tube **8** by means of a motor pump **7** powered with a power supply **36** from the multi-service pedestal **20**. The cooling water enters the housing **28** through the suction tube **8** and, after passing through the open loop heat exchanger, returns to the basin A with the discharge tube **9**.

[0062] The central conditioning unit in the housing **28** is connected to the fan coil terminal unit **18** through the hose **19** (shown in FIG. **8**) which contains inside the delivery and return pipes **16**, **17** of the closed loop heat exchanger of the central conditioning apparatus and the low voltage power cable **33** for a thermostat **37** mounted inside the cruiser C. The fan coil terminal unit **18** is powered via a cable and a plug **38** from the power supply of the cruiser C.

[0063] With reference to FIG. **10**, the main components of the central conditioning apparatus of the traditional type that is generally marked as **6** are described.

[0064] The central conditioning apparatus **6** comprises a compressor **39** of a working fluid, a four-way valve **40**, a four-way coil **41**, a suction separator **42** with receiver for the working fluid in liquid phase, a filter **43** and a thermostatic valve **44**, as well as a low pressure switch **45** and a high pressure switch **46**.

[0065] Present in the central conditioning apparatus **6** are an open loop heat exchanger **47** for the exchange of heat between the working fluid and the cooling water sucked by the cooling water suction pump **7** (FIG. **9**), and a closed loop heat exchanger **48** of the working fluid of the central conditioning apparatus **6**. In both the heat exchangers the working fluid flows in tubing coaxial to a cooling water serpentine and to a conditioning liquid serpentine that exchanges heat with the fan coil terminal unit respectively.

[0066] In particular, in the open loop heat exchanger **47** the pipe of the working fluid, indicated in the drawing with a line, is shown as entering the coaxial coupling **49**, where the sucked cooling water comes, and as exiting in the coaxial coupling **50** from which the cooling water flows returning to the basin A. Accordingly, the pipe of the working fluid is inner in the open loop heat exchanger **47**, i.e. is jacketed in the larger diameter tube of the cooling water.

[0067] In the closed loop heat exchanger **48** the inner pipe of the working fluid, which is also indicated in the drawing with a line, is shown as entering the inlet coaxial coupling **51**, in which the conditioning liquid from the fan coil terminal unit **18** arrives in the return pipe **17** (FIG. **9**). Shown as **52** is a reservoir of the conditioning liquid that may be water mixed with antifreeze, and as **53** a pump for its movement. Indicated as **54** is the coaxial coupling of the outlet working fluid pipe to the delivery pipe **17** toward the fan coil terminal unit **18**.

[0068] The closed loop heat exchanger **48** has opposite ends, and the open loop heat exchanger has an inlet end where probes for the detection of the temperature are located. More in detail, indicated as S**1** in FIG. **10** is a probe for the detection of the working fluid temperature at the entrance of the coaxial coupling **51** of the conditioning liquid returning from the fan coil terminal unit **18** to the closed loop heat exchanger **48**; indicated as S**2** is a probe for the detection of the working fluid temperature at the exit of the coaxial coupling **54** of the conditioning liquid delivered to the fan coil terminal unit **18** from the closed loop heat exchanger **48**; and indicated as S**3** is a probe for the detection of the working fluid temperature at the entrance of the coaxial coupling **49** with the cooling water coming through the tube **8** from the suction pump **7** in the open loop heat exchanger **47**.

[0069] Although not shown in FIGS. **6** and **8**, into the central conditioning apparatus **6** the connections with the input and output tubes **8**, **9** and with the cooling water supply and return pipes **16**, **17** of the conditioning water are made via quick couplings (not shown in detail) inserted into the support structure **21** of the multi-service pedestal **20**.

[0070] The hose **19** which joins the delivery and return pipes **16**, **17** to the fan coil terminal unit **18** is boarded and housed below deck through the window **34**, or a porthole, a skylight or a manhole. The fan coil terminal unit **18** is placed in the room to be cooled or heated. The fan coil terminal unit **18** can be of the traditional type, comprising a solid stainless metal casing possibly insulated with sound absorbing materials inside which are a finned heat exchange battery, a centrifugal fan, an inlet grille and a thermostat.

[0071] The central conditioning apparatus **6** is within the housing **28** which is inserted into the central recess **27** of the multi-service pedestal **20** as if it were a drawer sliding on two rails not shown in detail. The housing **28** is secured with locks (not shown) to prevent the improper removal.

[0072] The central conditioning apparatus **6** can be easily inserted and removed from the pedestal, and easily transported to and from a warehouse or office where it will be stored. Since the latter operation is quick and easy, the service manager or licensee of the pier, port or marina, will keep, when not in use, the unit central conditioning apparatus **6** and the fan coil terminal unit **18** for preserving them from wear, theft, damage or tampering. When the central conditioning apparatus **6** is not inserted, the multi-service pedestal maintains its traditional functions of water and electricity supply if not others. The coating with slats fastened with simple screws makes easy the replacement in case of damage. The utilities of the pedestal are easily accessible for inspection.

[0073] Both in the presence and absence of the central conditioning apparatus **6**, the design of the pedestal remains appropriate thanks to its coating with slats.

[0074] A third embodiment of a multi-service pedestal according to the present invention is now described, referring to FIGS. **11** to **13** that depict it in a front perspective view, a side view, and a rear perspective view respectively.

[0075] The multi-service pedestal generally indicated as **54** has a support structure **55** with a substantially squared S-shaped profile. The squared S-shaped profile is formed by a lower part **56** in the shape of an inverted L and by a C-shaped recess **57** in continuation of the upper end of the lower part **56** in the form of an inverted L. The upper end of the C-shaped recess extends upwards into a portion **58** inclined backward to receive the computer screen **5**. The support structure **55** of the multi-service pedestal **54** is provided frontally with a panel coating **59**, whose width is equal to the front width of the support structure **55**. The C-shaped recess is intended to removably receive the housing **28** of the central conditioning apparatus. The housing **28** is retained by lateral guides **60** and is locked with the clamping elements **61**. Suitably the C-shaped recess is inclined downwards, to avoid risk of forward displacement of the housing **28** contained therein. Further the housing **28** has a handle **62**.

[0076] Protruding from the rear wall of the C-shaped recess **57** are inlet and outlet fittings **63**, **64** for the cooling water of the open loop heat exchanger and fittings **65** and **66** for the discharge pipe **16** and the return pipe **17** respectively, of the fan coil terminal unit **18** (FIG. **9**). Although not shown in the figures, it is appropriate that taps are mounted on the fittings **65** and **66** to prevent the leakage of the conditioning liquid from the closed loop heat exchanger **47** (FIG. **10**). Similar taps are mounted on the delivery and return pipes **16** and **17** for preventing the leakage of conditioning liquid from the finned heat exchange battery of the fan coil terminal unit **18**. The connection of the delivery and return pipes **16** and **17** with taps at fittings **65** and **66** is made with quick couplings not shown.

[0077] Provided in the rear wall of the C-shaped recess **57** is also a socket **67** for the power supply of the compressor.

[0078] The lower part **56** in the shape of an inverted L of the support structure **55** is adapted to receive stably utilities. For this purpose, the lower part **56** has two vertical support walls **68**, **69**, on each of which sockets **14** with mechanical interlock and fittings **70** for water taps are mounted. Mounted between the two vertical support walls **68**, **69** is a cooling water suction pump **7** for the open loop heat exchanger **48** (FIG. **10**) of the central conditioning apparatus **6**.

[0079] Provided in the rear part of the lower part **56** in the shape of an inverted L is a plate **71** between the two support vertical walls **68**, **69**. Mounted on said plate **72** are two fittings **72**, **73** for the cooling water suction and return, and an outlet **74** in which is inserted a power cable, not shown, for the compressor of the central conditioning apparatus.

[0080] In accordance with the third embodiment of the invention, reference is made now to FIG. **14**, which is a side view of the multi-service pedestal in FIG. **11**, wherein the housing **28** of the central conditioning apparatus **6** is removed from the multi-service pedestal **54**. It should be evident that, before the removal of the housing **28**, the separation of the suction and discharge tubes of the cooling water of the open loop heat exchanger, of the delivery and return pipes of the conditioning liquid and electrical sockets to power supply the compressor of the central conditioning apparatus must be provided.

[0081] A fourth embodiment of a multi-service pedestal according to the present invention is now described, referring to FIGS. **15** and **16** that depict it in a schematic side view with and without, respectively, the central conditioning apparatus. The multi-service pedestal **75** of the fourth embodiment has a support structure **76** with a substantially squared S-shaped profile similar to that of the support structure **55** of the multi-service pedestal **54** of the third embodiment. Analogously, the multi-service pedestal **75** has a panel coating made of wood or composite material slats, which is not shown here in detail.

[0082] The squared S-shaped profile is formed by a lower part **77** in the shape of an inverted L and a C-shaped recess **78** in continuation of the upper end of the lower part **77** in the form of an inverted L. The upper end of the C-shaped recess **78** extends upwards into a portion **79** inclined backward to receive a computer screen (not shown). The C-shaped recess **78** is intended to removably receive the housing **28** of the central conditioning apparatus, which is suitably restrained and locked.

[0083] Advantageously, the C-shaped recess **78** is pivoted through cylindrical hinges **80** on the lower part **77** in the shape of inverted L.

[0084] A utility housing **81** of the multi-service pedestal **75** is received in the lower part **77** in the form of inverted L. The utility housing **81** is retained in position by the C-shaped recess **78** which has at the bottom a cover element **82** intended to be positioned on the utility housing **81** and to lock the latter when the C-shaped recess **78** is in the operating position as shown in FIG. **15**. After removal of the housing **28** of the central conditioning apparatus, the C-shaped recess **78** is capable of rotating counterclockwise as shown in FIG. **16** about the hinges **80**.

[0085] Provided between the lower part **77** in the form of inverted L and the C-shaped recess **78** is a means (not shown) for controlling the rotation and possibly for assisting it. The means for controlling the rotation may consist of guides cooperating with stop elements, and the rotation means may comprise gas springs or similar.

[0086] Upon the counterclockwise rotation of the C-shaped recess **78** the cover element **82** disengages the upper part of the housing **81** of the utilities.

[0087] Therefore, the housing **81** of the utilities is removable from the support structure **76** of the multi-service pedestal **75** according the fourth embodiment.

[0088] In the schematic views of FIGS. **15** and **16** there are not shown in detail the details of the components already described in the preceding embodiments. Provided in the housing **28** of the central conditioning apparatus are only a gripping handle **83** for transporting the housing **28** and a small control panel **84** by means of which one can turn on/off the

central conditioning apparatus, set its functions and read the operating temperatures. Indicated in the housing **81** of the utilities are a socket unit **85**, a door **86** for sockets and an openable door **87** to access the interior of the utility housing **81**. The socket cover **86** is used to close a sealed switchboard that is encased in the utility housing **81** and contains the electrical protections, such as circuit breakers and fuses, and transformers, switches and other. When the utility housing **81** is in the operating position, by opening the door **87** the tap water tubes and the electrical power cable from the quay or pier can be connected. The water tap is inserted into a fitting **88** under the door **86** for the power sockets.

[0089] Reference is made now to FIG. **17** that is a schematic side view of the multi-service pedestal in FIG. **15** without central conditioning apparatus and without utility housing.

[0090] In fact, after removing the housing **28** of the central conditioning apparatus and rotating upward the C-shaped recess **78**, the utility housing **81**, no longer restrained by the cover element **82**, can be removed.

[0091] As it is evident, the representation in FIGS. **15** to **17** is schematic, and any configuration of support structure that allows the installation and removal of the housing of the central conditioning apparatus and the utility housing can be provided.

[0092] This is particularly useful, not only when the relevant apparatuses have to be saved because not in use but also when they have to be inspected. Their mobility reduces the number of operations on site, with a result of reducing operating cost.

[0093] Evident are the advantages of the present invention that consists of a combination of a multi-service pedestal for ports and marinas and an air conditioning system. The invention allows to offer fresh and warm air inside cruisers that have no stationary air conditioning system on board due to the encumbrance or cost thereof.

[0094] The multi-service pedestal uses an air conditioning system comprising a central conditioning apparatus removably inserted in the multi-service pedestal, and a small, silent fan coil terminal unit onboard the cruiser when it is moored. The central apparatus and the terminal unit are connected through hoses that carry and circulate heated or chilled liquid. The temperature in the room to be conditioned is controlled by a thermostat inserted into the terminal unit, which also adjusts the speed of the air flow.

[0095] The multi-service pedestal with air conditioning system takes advantage of its natural place near seas, lakes and rivers in order to use the water in the conditioning process as in most air conditioners installed on board vessels.

[0096] The advantage lies in the fact that the water cooling pump and central conditioning apparatus remain on the quay or pier and only the small terminal unit is placed on board. Small boats can thus benefit from an air conditioning system that replaces dangerous heaters and bulk portable air conditioners.

[0097] The multi-service pedestal with air conditioning system allows marinas and ports to offer a rental service of air conditioning system, with the result of increasing the safety of people and cruisers, the usability of the cruiser throughout the year and, consequently economic benefits for operators of marinas and ports that would increase their volume of business.

[0098] The multi-service pedestal according to the present invention may be marketed with or without the air conditioning system, the central conditioning apparatus being a removable element and the pedestal being ready to host it via easy connection with pipes and cables.

[0099] As an alternative to cooling with water taken from the surrounding environment, the central conditioning apparatus located on the multi-service pedestal can be fitted with an air cooling, possibly with forced ventilation.

[0100] In its various embodiments, the multi-service pedestal has a simple design that allows rapid and economical maintenance of the various components that constitute it. The use of fully recyclable coating materials such as extruded wpc (wood plastic composite) made of wood dust and polyethylene, and the main steel structure, make the multi-service pedestal an environmental friendly product.

[0101] Without departing from the invention, the multi-service pedestal can still be made with any design and material. Electrical and electronic components for controlling utilities and for metering energy and water, and further motion detectors, cameras, webcams, phone service or internet can be added.

[0102] The central conditioning apparatus is enclosed in a housing made of a corrosion-resistant material that is coated with the same slats of composite material or wood covering the support structure that houses it. By doing so, an aesthetic continuity is obtained when the central conditioning apparatus is inserted into the pedestal.

[0103] It should be appreciated that the multi-service pedestal according to the present invention may be placed, besides in ports and marinas, even on campsites or other picnic areas, where so-called recreational vehicles such as caravans, campers, motor homes park, or temporary and permanent shelters such as tents and bungalows for the outdoors are planned. Without making substantial changes, except that providing the open loop heat exchanger more convenient for the surrounding environment, the central conditioning apparatus can be removably placed in a support structure of a multi-service pedestal according to the invention and be connected to a terminal unit placed on the recreational vehicle or in the temporary or permanent shelter for conditioning the air within them by heat exchange with a conditioning liquid.

1. A multi-service pedestal (**1**; **20**; **54**; **75**), in particular for ports and marinas, being provided with a support structure (**10**; **21**; **55**; **76**) and adapted to supply a variety of utilities, such as electricity, tap water, telephone and television connections, to a cruiser (C) moored at a pier (P) or quay, characterized in that the multiservice pedestal (**1**; **20**; **54**; **75**) further comprises a central conditioning apparatus (**6**) which is located in the multi-service pedestal (**1**; **20**; **54**; **75**) and is adapted to be connected to a terminal unit (**18**) onboard the moored cruiser (C) for conditioning the air within it by heat exchange with a conditioning liquid.

2. The multi-service pedestal (**1**; **20**; **54**; **75**) according to claim **1**, wherein the central conditioning apparatus (**6**) includes a working fluid, an open loop heat exchanger (**47**) for a heat exchange between said working fluid and cooling water, a suction pump (**7**) of cooling water for the open loop heat exchanger (**47**), a closed loop heat exchanger (**48**) for said working fluid of the central conditioning apparatus (**6**) with a delivery pipe (**16**) for sending said conditioning liquid at a selected temperature to the terminal unit (**18**) and a return tube (**17**) from it, and wherein the terminal unit (**18**) is a fan coil for the conditioning liquid equipped with a thermostat (**37**), the fan coil being connected to the closed loop heat exchanger (**48**) with said delivery tubes (**16**) and return (**17**).

3. The multi-service pedestal (1; 20; 54; 75) according to claim 2, wherein said open loop heat exchanger (47) has a coaxial tubing in which an inner pipe serves for the circulation of the working fluid of the central unit conditioning (6), and an outer tube serves for the circulation of cooling water, the open loop heat exchanger (47) having an inlet end, in which there is a probe (S3) for the detection of the temperature.

4. The multi-service pedestal (1; 20; 54; 75) according to claim 2, wherein said closed loop heat exchanger (48) has a coaxial tubing in which an inner pipe serves for the circulation of the conditioning liquid of the fan coil (18), and an outer pipe serves for the circulation of the working liquid of the central conditioning apparatus, the closed loop heat exchanger (48) having opposite ends in each of which there are probes (S1, S2) for the detection of the temperature.

5. The multi-service pedestal (1; 20; 54; 75) according to claim 2, wherein said delivery and return pipes (16, 17) connecting said central conditioning apparatus (6) and said fan coil are individually coated with insulating material and joined together with a retaining means which retains a flanked electric cable (33) of the thermostat (37) of the fan coil.

6. The multi-service pedestal (1; 20; 54; 75) according to claim 2, wherein provided in the return pipe (17) from said fan coil are a reservoir of conditioning liquid (52) and a pump (53).

7. The multi-service pedestal (1; 20; 54; 75) according to claim 2, wherein said central conditioning apparatus (6) comprises a compressor (39) for the working fluid, a four-way valve (40), a four-way coil (41), a suction separator and receiver (42) of the working fluid in liquid phase, a filter (43) and a thermostatic valve (44), as well as high and low pressure switches (45, 46).

8. The multi-service pedestal (1) according to claim 1, wherein said support structure (10) is a hollow load bearing structure extending upwards, having a front side (11) from which a computer screen (5) protrudes, and a rear side (12) provided with a door (13) openable for access to the inside of the hollow load bearing structure in which said central conditioning apparatus (6) is mounted lower and said variety of utilities are mounted upper, as accessible through said door (13).

9. The multi-service pedestal (20) according to claim 1, wherein said support structure (21) has a profile shaped in form of an omega rotated upward and having a lower part (22) connected to a support plate (25), an upper part (24) in which a computer screen (5) is placed in front, and a central recess (23) configured for removably receiving a housing (28) for said central conditioning apparatus (6).

10. The multi-service pedestal (20) according to claim 8, wherein said support structure (21) is provided in front with a panel coating (26), the frontal width of the support structure (21) being less than that of the panel coating (26).

11. The multi-service pedestal (54; 75) according to claim 1, wherein said support structure (55; 76) has a squared S-shaped profile, extending upward in a rearward inclined portion (58; 79) for receiving a computer screen (5), the squared S-shaped profile comprising a C-shaped recess intended to removably receive said central conditioning apparatus (6), and a lower part in the form of an inverted L (56; 77).

12. The multi-service pedestal (54) according to claim 10, wherein said support structure (55) is provided in front with a panel coating (59), the frontal width of the support structure (55) being equal to that of the panel coating (59).

13. The multi-service pedestal (54) according to claim 10, wherein the lower part of the support structure (55) is adapted to receive stably a variety of utilities.

14. The multi-service pedestal (75) according to claim 10, wherein the C-shaped recess (78) is pivoted by cylindrical hinges (80) to the lower part in the form of an inverted L (77), so that removably located on the lower part in the form of inverted L (77) is a housing (81) for a variety of utilities, said housing (81) being capable of being removed from the multi-service pedestal (75) by turning up the C-shaped recess (78), after removal of the central conditioning apparatus (6) from the C-shaped recess (78).

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