

SPECIFICATION

Service line terminal box system, especially for ships moored to quays

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This invention relates to a service line terminal box system especially for ships moored to quays but also for aircraft in airports, caravans on camping sites and the like.

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When ships, pleasure boats and particularly fishing boats lie berthed in harbour they need to have the use of electrical power from the public mains. To satisfy this requirement, mostly rather provisional arrangements have been provided hitherto, comprising

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distribution boxes from which overhead lines are temporarily drawn to the different boats. These prior-art arrangements suffer from obvious drawbacks with regard to security. The same conditions prevail on camping sites and in airports as well.

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The primary object of the present invention therefore is to provide an outdoor terminal box system which ensures improved security and particularly serves to supply fishing boats moored to quays with electrical power. However, the terminal box is also

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more generally useful, for example, for the supply of water and/or fuel.

To this end, the invention provides a service line terminal box system supplying, at predetermined points outdoors, such facilities as electrical power, telephone service, water, compressed air, vacuum and/or fuel particularly for ships moored to quays. This terminal box system comprises a plurality of service line terminal boxes, a coverplate countersunk in the ground at the predetermined points for each of the boxes, over which coverplate vehicles can be driven and which is self-locking and in closed position leaves an opening to the interior of the box to permit passing therethrough a line temporarily connectible to a service line socket outlet in the box, the bottom of each of the boxes being inclined towards a drain hole connected to a drain pipe, and one or more service lines fixedly connected through holes in the walls of the box to the service line socket outlet in the box.

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The invention will be described in greater detail below with reference to the accompanying drawing which illustrates an embodiment of the service line terminal box system for supplying ships with electrical power. In the drawing:

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Fig. 1 is a top plan view of a harbour quay structure; and

Fig. 2 is a cross-section on the line II-II in Fig. 1.

In the harbour shown in Fig. 1, a plurality of service line terminal boxes 1 are countersunk in the quay short of the edge thereof. Each of the boxes contains three one-phase electrical socket outlets 2 (see Fig. 2) which are energized via underground cables 3 from distribution boxes 4 which in turn are connected to the public mains. Each box 1 can contain, for example, three one-phase socket outlets 2 of 16 A each, but can alternatively contain two three-phase socket outlets of 32 A each, or one three-phase socket outlet of 63 A.

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The substantially parallelepipedical terminal box 1 has bent and welded-together walls of sheet steel

and a coverplate 5 likewise of sheet steel, which is connected by hinges 6 to one short side wall 7 of the housing and in closed position also rests on the upper edges of the long side walls such that vehicles can be driven over the coverplate 5. The hinges 6 can be designed in a manner known per se such that the maximum opening angle of the coverplate 5 is less than 90°, which means that on being opened the coverplate cannot be set in a stable position. A maximum opening angle of less than 90° can also be achieved by such a hinge arrangement as is shown in Fig. 2. As a result, once the coverplate 5 is not retained in open position it will fall by gravity into closed position in which the coverplate 5 is besides automatically locked, for example, by means of a latch 8. Thus, the coverplate 5 is self-closing and can only be opened by means of a key.

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The bottom 9 of the box is inclined towards a drain hole 10 which is surrounded by a flange 11 to which there can be mounted a drain pipe 12 extending outwardly to the edge of the quay.

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The other short side wall 13 of the box is deflected outwardly at an angle at its upper portion such that slot-shaped opening 14 is formed, of sufficient width to accommodate an electrical cable without any risk of squeezing it. Further, the opening is positioned on the same side as the drain hole 10 so that water entering the opening 14 will be led directly out through the hole 10 and the pipe 12.

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As shown by dot lines in Fig. 2 a plug 15 at the end of a line 16 can be inserted in the socket outlet 2 while the coverplate 5 is open. As indicated in Fig. 1, the line 16 extends to an electrical connection box 18 removably mounted on a boat 17. The connection box 18 in turn contains a plurality of electrical socket outlets with associated fuses, and besides an electricity meter.

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The supply lines 3 can be laid in individual trenches, as indicated in the lower portion of Fig. 1, or be placed in a common covered trench extending beyond the terminal boxes 1, as indicated in the upper portion of Fig. 1. Whenever the quay is formed with a protruding quay plate, as indicated by dash and dot lines at the bottom of Fig. 2, the supply lines 3' can be secured to the under surface of said plate. This will also facilitate the mounting of the drain pipe 12' which in that case can be positioned vertically.

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To prevent ice formation in the box 1 or the pipe 12 a heating cable 19 can be disposed round the bottom 9 of the housing 1 and throughout the pipe 12. To avoid that water flowing downward through the opening 14 splashes onto the socket outlet 2, a splash plate 20 is arranged in an obliquely upstanding position from the bottom 9 between the hole 10 and the socket outlet 2. Further, a depending rubber skirt 21 is mounted at the under surface of the coverplate 5. As will appear from Fig. 2, the skirt 21 overlaps the splash plate 20 when the coverplate 5 is closed. For withdrawal of the line 16 the rubber skirt 21 may have a vertical slot extending from the lower edge thereof. Moreover, a grid 22 is disposed over the drain hole 10 to prevent clogging of the pipe 12. Finally, it should be mentioned that the hinge 6 is screwed to the inner side of the wall 7 such that the coverplate 5, if necessary, can be removed although

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it is countersunk on a level with the surrounding ground surface.

In view of security, the above-described system requires earth fault breakers and may need to be equipped with submersible electrical connecting socket outlets 2.

While the above-described embodiment of the invention is concerned with electrical socket outlets, it is obvious that other types of service line socket outlets, for example, for telephone service, water, compressed air, vacuum and/or fuel can be similarly arranged. Though being particularly well suited for electric power supply purposes, the invention is not limited to such a use. It is also obvious that the invention is useful in other connections than with the above-described harbour quay structure, namely whenever it is desired to have the temporary use of say electrical power, telephone service, water, compressed air, vacuum and/or fuel at predetermined points outdoors. The connection of the drain pipe 12 must of course be adapted to the use concerned.

CLAIMS

1. Service line terminal box system for supplying, at predetermined points outdoors, such facilities as electrical power, telephone service, water, compressed air, vacuum and/or fuel, particularly for ships moored to quays, comprising a plurality of service line terminal boxes, a coverplate countersunk in the ground at the predetermined points for each of the boxes, over which coverplate vehicles can be driven and which is self-locking and in closed position leaves an opening to the interior of the box to permit passing therethrough a line temporarily connectible to a service line socket outlet in the box, the bottom of each of the boxes being inclined towards a drain hole connected to a drain pipe, and one or more service lines fixedly connected through holes in the walls of the box to the service line socket outlet in the box.

2. System as claimed in claim 1, wherein each service line terminal box has a heating cable loop which extends around the bottom of the box and throughout the drain pipe.

3. System as claimed in claim 1 or 2, wherein the drain hole is surrounded by a flange to which the drain pipe is fixable.

4. System as claimed in any one of claims 1-3 in a quay structure having a protruding quay plate, wherein the drain pipe extends substantially vertically from the under surface of the quay plate up to the drain hole.

5. System as claimed in claim 4, wherein the supply lines are drawn at the under surface of the protruding quay plate.

6. System as claimed in any one of claims 1-4, comprising a covered trench extending along the terminal boxes, the supply lines being laid in said trench.

7. System as claimed in any one of claims 1-6, wherein the coverplate is secured to the side of the box opposite to the line leading-in opening, by means of hinges so arranged that on being opened the coverplate cannot be set in a stable position.

8. System as claimed in claim 7, wherein the coverplate in closed position rests on the upper

edges of three of the four side walls of the terminal box, the upper part of the fourth side wall is deflected outwardly to form the line leading-in opening and the drain hole is positioned adjacent the fourth side wall.

9. System as claimed in any one of claims 1-8, the service line socket outlets comprising an electric power socket outlet, wherein the line temporarily connectible with its one end to the electric power socket outlet is fixedly connected at its other end to an electrical connection box which contains a plurality of electrical socket outlets and besides an electricity metre.

10. System as claimed in any one of claims 1-7, wherein each terminal box has a splash plate extending from the bottom to the coverplate and situated between the drain hole and the service line socket outlet.

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