

TITLE OF THE INVENTION

**WIRE CUM COVER HOLDER FOR USE WITH
RECONFIGURABLE FRAME SYSTEM FOR INTERIOR USE**

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FIELD OF THE INVENTION

The present invention relates to a wire cum cover holder for use with a frame system of horizontal beams and vertical hollow poles forming a support system for interior of buildings, as disclosed in PCT/SG02/00232. Such a support system have demountable wall panels of different types, can take loads such as cabinets and carrying electrical and data cables along the horizontal beams and alongside the vertical hollow poles. The wire cum cover holder allows quick installation and quick re-laying of the electrical and data cables within the frame system. It also can be fitted easily with a pole cover, shielding the electrical and data cables and providing an aesthetic look for the vertical hollow poles.

20 BACKGROUND OF THE INVENTION

PCT/SG02/00232 filed on 11.10.2002 describes a reconfigurable frame system consisting a first vertical hollow pole erected on a surface, a first C-shaped end of a first horizontal beam fitted into a docking rail of the first vertical hollow pole, and held in place by applying a first clamping means. A second C-shaped end of the first horizontal beam is then fitted into a docking rail of the second vertical hollow pole and held in place by a second clamping means. A second horizontal beam has its first C-shaped end fitted into the docking rail of the first vertical hollow pole and the second C-shaped end fitted into the docking rail of the second vertical hollow pole, and held in place by a third and a fourth clamping means. More horizontal beams and more vertical hollow poles can be held in position by more clamping means, to form the frame system. Panels and cabinets and the like can be installed on the frame system. Entire offices can be built using this system as described in this manner.

Modern offices are also extensively wired with electric wires and network and data cables. An entire modern office interior system of suites and rooms can be built with the reconfigurable frame system of PCT/SG02/00232. Such a reconfigurable frame system also allows electric wires, network, telecommunication and data cables (hereafter referred to as "cables") to be laid inside the horizontal beams and vertical poles at time of erection. Such a frame system also allows the office to be reconfigured and re-installed easily, to meet changing staff and business requirements. Along with the need to re-configure and re-build the office interior system is the requirement for quick pulling out of electrical wires and data cables and quick installation of the same, in the newly reconfigured office suites and offices.

SUMMARY OF THE INVENTION

The vertical hollow poles described in PCT/SG02/00232 have either three or four radially curved inward sides. It is an object of the invention that the wire cum cover holder of the invention has to be easily fitted and installed inside the radially curved inward sides. A second object is that the same wire cum cover holder should be easily removed and installed again. A third object is the cables can be easily laid along the vertical hollow poles and be held in place by the wire cum cover holder and that the same cables be easily pulled out, for re-installation. Lastly it is an object that the wire cum cover holder has grips for a pole cover for the unsightly cables installed on the curved insides of the vertical hollow poles, keeping the unsightly cables from view.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a top view of a first embodiment of the invention.

Fig. 1A is a perspective view of a first embodiment of the invention.

Fig. 2 is a cross section view of the holder of the invention mounted on a vertical hollow pole used in described in PCT/SG02/00232.

5 Fig. 3 is a perspective view of a holder mounted on the vertical hollow pole with a cable inserted in the cable holding space.

Fig. 4 is a perspective view of the holder of the invention mounted on a vertical hollow pole used in described in PCT/SG02/00232 with a cable inserted in the cable holding space and with the pole cover
10 about to be mounted on the pole.

Fig. 5 is a cross section view of the holder of the invention mounted on a vertical hollow pole used in described in PCT/SG02/00232, with the cable inserted in the cable holding space and with the pole cover
15 pressing against the holder.

Fig. 6 is a top view of a second embodiment of the invention.

20 Fig 6 A is a perspective view of a second embodiment of the invention.

Fig. 7 is a top view of a third embodiment of the invention.

25 Fig 7 A is a perspective view of a third embodiment of the invention.

Fig. 8 is a top view of a third embodiment of the invention.

Fig 8 A is a perspective view of a third embodiment of the invention.

30 DESCRIPTION OF THE PREFERRED EMBODIMENTS

An embodiment of the present invention will now be described with reference to the accompanying drawings.

35 Fig. 1 is a top view of a wire cum cover holder 1 used in a reconfigurable frame system of horizontal beams and vertical hollow

poles forming a support system for interior of buildings, as disclosed in PCT/SG02/00232. Such a support system have demountable wall panels of different types, can take loads such as cabinets and carry cables along the horizontal beams and alongside the vertical hollow poles. The wire cum cover holder 1 allows quick installation and quick re-laying of the cables within the vertical hollow poles of the frame system. It also can be fitted easily with a pole cover 4, shielding the unsightly cables 3 from view and providing an aesthetic look for the vertical hollow poles 2.

10 The wire cum cover holder 1, made of resilient material, has a concave base 10, with an outer face 14 and an inner side 13; the concave base 10 having a first arm 11 and a second arm 12; a first leg 15 and a second leg 16, spaced apart, the first leg 15 extending from the inner side 13 of the concave base 10, forming a U shape with the first arm 11 of the concave base 10, the second leg 16 extending from the inner side 13 of the concave base 10, forming a U shape with the second arm 12 of the concave base 10, a first cable receiving foot 17 extending inwards from the end of the first leg 15, a second cable receiving foot 18 extending inwards from the end of the second leg 16, a cable holding space 19 being formed from the inner side of the concave base 10, the first leg 15 and second leg 16, first cable receiving foot 17 and second cable receiving foot 18. The cable holding space 19 thus created holds the cables laid in the vertical hollow pole 2.

Fig 1A shows a perspective view of a first embodiment of the invention. The cables 3 can be easily pushed into the cable holding space 19 by firstly sliding the cables 3 between the overlapping the first and second cable receiving foot 17, 18. The first and second cable receiving foot 17, 18 points inwards towards the center of the wire cum cover holder 1, with the first cable receiving foot 17 overlapping the second cable receiving foot 18. Cables 3 can be slidingly pushed through the first and second cable receiving foot 17, 18. Upon the cables passing the first and second cable receiving foot 17, 18, the first and second cable receiving foot 17, 18 being resilient, will

return to its overlap position, holding the cables 3 in the space 19 formed from the inner side 13 of the concave base 10, the first and second legs 15, 16.

- 5 Fig. 2 is a cross section view of the wire cum cover holder 1 mounted on a vertical hollow pole 2 in described in PCT/SG02/00232. Cables 3 are laid through the entire framework, using the vertical hollow poles and horizontal beams as described in PCT/SG02/00232.
- 10 The wire cum cover holder 1 is installed on a vertical hollow pole 2 firstly by facing and then pushing the inner side 13 of the concave base 10 against the radially curved inward side 22 of the vertical hollow pole 2. The concave base 10 fits snugly into the radially curved inward side 22 of the vertical hollow pole 2. The first and second arms
- 15 11,12 of the wire cum cover holder 1 then press against the inner radially curved inward side 22 of the vertical hollow pole 2. When the wire cum cover holder 1 is released, the first and second arms 11,12 being resilient, press against the base of the mushroom shaped protrusions 21 of the vertical hollow pole 2. The frictional force of the
- 20 first and second arms 11, 12 pressing against the base of the mushroom shaped protrusions 21 acts to keep the wire cum cover holder 1 in position. The wire cum cover holder 1 is thus installed on the vertical hollow pole 2 through this simple and quick mounting procedure. This procedure dispenses away with the need to drill holes
- 25 in the vertical hollow pole 2 for the installation of wire cum cover holder 1.

Fig. 3 is a perspective view of a wire cum cover holder 1 mounted on the vertical hollow pole 2 with a cable 3 inserted in the cable holding

30 space 19.

Fig. 4 shows a perspective view of the wire cum cover holder 1 with a cable 3 inserted in the cable holding space 19. A pole cover 4 for the vertical hollow pole 2 is about to be mounted on the vertical hollow

35 pole 2.

Fig. 5 is a cross section view of Fig 4. This shows the cross section view of the wire cum cover holder 1 with the cable 3 inserted in the cable holding space 19. In this figure, the pole cover 4 for the vertical hollow pole 2 is shown being received by the first and second grip 27,28 of the wire cum cover holder 1. However, the pole cover 4 is yet to be mounted on the vertical hollow pole 2.

Fig. 6, 6A, 7, 7A and 8 and 8A shows different embodiments of the wire cum cover holder 1. For a vertical hollow pole 2, different embodiments of the wire cum cover holder 1 are used in different locations along the vertical pole 2. Also, different embodiments are used on different types of vertical hollow pole 2, which either has four radially curved inward sides 22 or three radially curved inward sides 22. One embodiment (Fig. 6, 6A) comes with a first web 29 on the underside of the wire cum cover holder 1, at the joint between the end of the first leg 15 and the first cable receiving foot 17 and a second web 30 at the joint between the end of the second leg 16 and the second cable receiving foot 18. The first and second web 29, 30 act as additional stabilizers for the vertical hollow pole 2 with four radially curved inward sides 22. This embodiment is used for the bottom of the vertical hollow pole 2.

Embodiments in Fig. 7, 7A and 8, 8A corresponds to Embodiments in Fig.1, 1A and Fig. 6,6A. The embodiments in Fig. 7, 7a, 8, 8A are used on a vertical hollow pole 2 with three radially curved inward sides 22. Embodiment in Fig 8, 8a comes with a first web 29 on the underside of the wire cum cover holder 1, between the end of the first leg 15 and the first cable receiving foot 17 and a second web 30 between the end of the second leg 16 and the second cable receiving foot 18. The first and second web 29,30 acts as additional stabilizers for the vertical hollow poles 2 with three radially curved inward sides 22. This embodiment is used for the bottom of the vertical hollow pole 2.

An operation of the wire cum cover holder 1 would be described herein to illustrate its workings with reference to the working of the reconfigurable frame system of PCT/SG02/00232. The reconfigurable

frame system has a framework of vertical hollow poles and horizontal beams. The vertical hollow pole 2 has three or four mushroom-shaped protrusions 21 in the form of docking rails along its length. Accordingly, the vertical hollow pole 2 has either three radially curved inward sides 22 or four radially curved inward sides 22. Horizontal beams can be laid and clamped securely to the docking rails of the three other hollow vertical poles, if desired.

Stresses of heavy loads are evenly distributed to the horizontal beams and vertical hollow poles. Heavy loads of up to 100 kg can therefore be placed on the framework. When the frame is laid, besides fitting lightweight panels onto the framework, heavy objects such as shelves, racks, cabinets and the like can now be fitted onto the panels with use of simple clamps. The frame can be easily re-configured by dismantling any horizontal beam and vertical hollow pole and installing them at different locations and at different heights within the frame system.

The horizontal beams allows cables to be laid along its recessed side. Similarly, the vertical hollow poles 2 also allow cables 3 to be laid along its radially curved inward sides 22. When the framework of vertical hollow poles and horizontal beams are erected, cables are laid at time of erection of the framework, within the framework, thus avoiding unsightly wires and cables. When there is a need to re-lay the cables 3 or add more cables 3, it is relatively easy to remove the pole cover 5 and take out the cables 3 or add in additional cables 3.

Since a vertical hollow pole 2 has three or four radially curved inward sides 22, cables 3 are laid along any one of the inward side 22. The wire cum cover holder 1 is conceived so that the wire cum cover holder 1 can be easily installed on the radially curved side 22 without the need for holes to be drilled for installation of a wire clip or wire holder. Furthermore, there is no need for the vertical hollow poles to be manufactured with holes at specific locations in the pole to hold wire clips and the like, therefore simplifying the manufacturing

process for the vertical hollow poles. The wire cum cover holder 1 is also designed to receive and hold the cables 3 readily and easily. The wire cum cover holder 1 is also made of resilient material to allow the cables 3 to be removed easily and quickly. Lastly the wire cum cover holder 1 has the additional function of receiving and gripping the sides 5 of the pole cover 4, to act as a cover for the vertical hollow pole 2, enclosing the cables 3 therein and at the same time giving aesthetic value to the vertical hollow pole 2.

10 The wire cum cover holder 1 is mounted on a vertical hollow pole 2 simply by facing and then pressing the inner side 13 of the concave base 10 against the radially curved inward side 22 of the vertical hollow pole 2. The concave base 10 fits snugly into the radially curved inward side 22 of the vertical hollow pole 2. The first and second arms 15 11,12 of the wire cum cover holder 1 is then press against the inner radially curved inward side 22 of the vertical hollow pole 2. When the wire cum cover holder 1 is released, the first and second arms 11,12 being resilient, press against the base of the mushroom shaped protrusions 21 of the vertical hollow pole 2. The frictional force of the 20 first and second arms 11, 12 pressing against the base of the mushroom shaped protrusions 21 acts to keep the wire cum cover holder 1 in position.

The cables 3 can be easily placed inside the cable holding space by 25 sliding them between the first and second cable receiving foot 17, 18. The first and second cable receiving foot 17, 18 points inwards towards the center of the wire cum cover holder 1, and the first cable receiving foot 17 overlaps the second cable receiving foot 18. Cables 3 are slidingly pushed through the overlapping first and second cable 30 receiving foot 17, 18, which flexes slightly to allow the passage of the cables 3. After the cables 3 had passed through the first and second cable receiving foot 17, 18, they return to its overlap position, thus holding the cables 3 in the cable holding space 19 formed from the inner side 13 of the concave base 10, the first and second legs 15, 35 16.

After the installation of the wire cum cover holder 1 on the inner radially curved inward side 22 of the vertical hollow pole 2, the cables 3 are then held within the cable holding space 19 of the wire cum cover holder 1. Finally, a pole cover 4 for the vertical hollow pole 2 would be mounted on the vertical hollow pole 2.

An embodiment of the wire cum cover holder 1 with a grip 27, 28 at the end of each leg 15, 16 would be installed at an appropriate length along the vertical hollow pole 2. Each side 5 of the pole cover 4 is curved inwards to fit into the sides of the mushroom-shaped protrusions 21 of the vertical hollow pole 2. When the pole cover 4 is pushed into the vertical hollow pole, the side 5 of the pole cover 4 will fit into the grip 27, 28 on each of the wire cum cover holder 1. The cables 3 are thus covered up and hidden from public view. Furthermore, the pole cover 4 gives an aesthetic finish to the entire reconfigurable frame system.

The reconfigurable frame system is easily re-configured by dismantling any horizontal beam and vertical hollow pole and installing them at different locations and at different heights within the frame system. The cables 3 likewise are easily removed and re-laid in a new location or in a reconfigured arrangement.

Removal of the cables 3 is also easy since the cables 3 are merely held within the cable holding space 19. The first and second cable receiving foot 17, 18 is arranged such that each foot points inwards towards the center of the wire cum cover holder 1, with the first cable receiving foot 17 overlapping the second cable receiving foot 18. In this manner, cables held in the cable holding space 19 which are packed inside the cable holding space are easily removed by sliding the cables 3 between the first and second cable receiving foot 17, 18. Upon the cables 3 sliding out through the first and second cable receiving foot 17, 18, these being resilient, will return to its overlap position.

Since there are two or more cables such as electricity wire, data network cable, telecommunication cable, these cables combined would

take up almost the available space within the cable holding space 19. There is therefore no need for additional clips to hold the cables 3. If the number of cables are not sufficient to fill the cable holding space 19, one or more wire cum cover holder 1 can be installed along the
5 length of the radially curved inward side 22 of the vertical hollow pole 2 to hold the sagging cables. Should more cables be required, these additional cables could be laid in a second cable holding space 20 formed by the first arm 11, first leg 15, mushroom shaped protrusion 21 at one end of the vertical hollow pole 2 and the pole cover 4 as well
10 as in a third cable holding space 20A formed by the second arm 12, second leg 16 and the mushroom shaped protrusions 21 at the other end.

ADVANTAGEOUS EFFECTS OF THE INVENTION

15 The use of the wire cum cover holder dispenses with the requirement to drill holes for installation of wire/cable holders. Use of the wire cum cover holder is therefore a cheaper, faster and cleaner method for installation of cables within the reconfigurable frame system. Likewise,
20 use of the wire cum cover holder would allow cheaper, faster and cleaner method for removal of cables. Since the wire cum cover holder has grips, the vertical hollow pole can be covered with a pole cover which is mounted on the wire cum cover holder. The pole cover covers up the unsightly cables and protects the cables at the same time.

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CLAIMS

1. A single piece resilient wire cum cover holder 1 for holding
5 electrical and data cables 3 laid on a radially curved inward side 22 of
a vertical hollow pole 2 in a reconfigurable frame system of
horizontal beams and vertical hollow poles which forms a support
system for interior of buildings, the wire cum cover holder 1 having:-
- 10 a concave base 10, with an outer face 14 and an inner side 13;
ending in a first arm 11 and a second arm 12;
- a first leg 15 and a second leg 16, spaced apart;
- 15 the first leg 15 extending from the inner side 13 of the concave
base 10, forming a U shape with the first arm 11 of the concave
base 10;
- the second leg 16 extending from the inner side 13 of the
20 concave base 10, forming a U shape with the second arm 12 of
the concave base 10;
- a first cable receiving foot 17 extending inwards from the end of
the first leg 15; and
- 25 a second cable receiving foot 18 extending inwards from the end
of the second leg 16;
- characterized by the formation of a cable holding space 19 from the
30 inner side 13 of the concave base 10, the first leg 15 and second
leg 16, the first cable receiving foot 17 and the second cable receiving
foot 18, said cable holding 19 space to hold electrical and data cables
3.

2. A first arm 11 and a second arm 12 as claimed in Claim 1 wherein the outer face 14 of the concave base 10 is fitted onto the
5 radially curved inward side 22 of the vertical hollow pole 2, the first arm 11 and the second arm 12 then presses on the mushroom shaped protrusions 21 at each end of the radially curved side of the vertical hollow pole, thereby securely holding the wire cum cover holder 1 in place on the vertical hollow pole 2.

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3. A first cable receiving foot 17 and a second cable receiving foot 18 as claimed in Claim 1 wherein the first cable receiving foot 17 overlaps the second cable receiving foot 18 to allow electrical and data cables 3 to be slided between the first cable receiving foot 17
15 and the second cable receiving foot 18 for installation of electrical and data cables 3 in the cable holding space 19 and the same electrical and data cables 3 can be removed from the cable holding space 19 by sliding the electrical and data cables out between the first cable receiving foot 17 and the second cable receiving foot 18.

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4. A first grip 27 and a second grip 28 for a wire cum cover holder 1 as claimed in Claim 1, said first grip 27 between the end of the first leg 15 and the first cable receiving foot 17 and said second grip 28 between the end of the second leg 16 and the second cable receiving
25 foot 18.

5. A first web 29 and a second web 30 for a wire cum cover holder 1 as claimed in Claim 1, said first web 29 on the underside between the end of the first leg 15 and the first cable receiving foot 17 and
30 said second web 30 on the underside between the end of the second leg 16 and the second cable receiving foot 18.

6. A second cable holding space 20 for a wire cum cover holder 1 as claimed in Claim 1, said second cable holding space formed
35 between the first arm 11, the first leg 15, the mushroom shaped

protrusion 21 at one end of the vertical hollow pole 2 and the pole cover 4.

7. A third cable holding space 20A for a wire cum cover holder 1
5 as claimed in Claim 1, said third cable holding space formed between the second arm 12, the second leg 16 and the mushroom shaped protrusion 21 at the other end of the vertical hollow pole 2 and the pole cover 4.

10 8. A first grip 27 and a second grip 28 as claimed in Claim 4, said first grip 27 and second grip 28 for fitting of a pole cover 4, which can be mounted on two or more wire cum cover holders 1 installed on a vertical hollow pole 2, to act as a cover of the cables 3.

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9. A wire cum cover holder as claimed in Claim 1 which is made of molded plastics.

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