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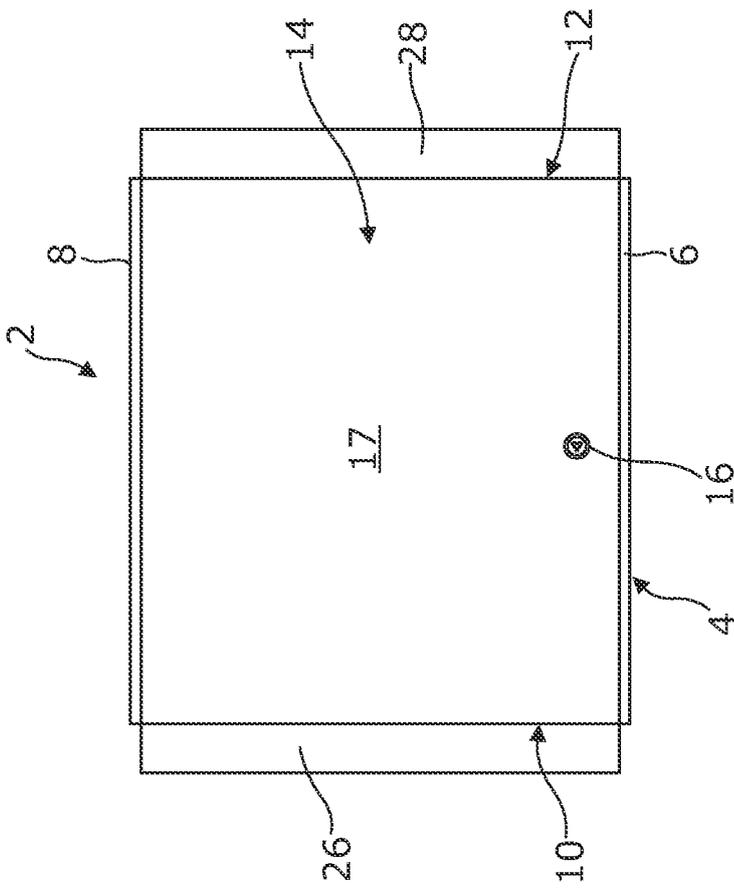


Fig. 1

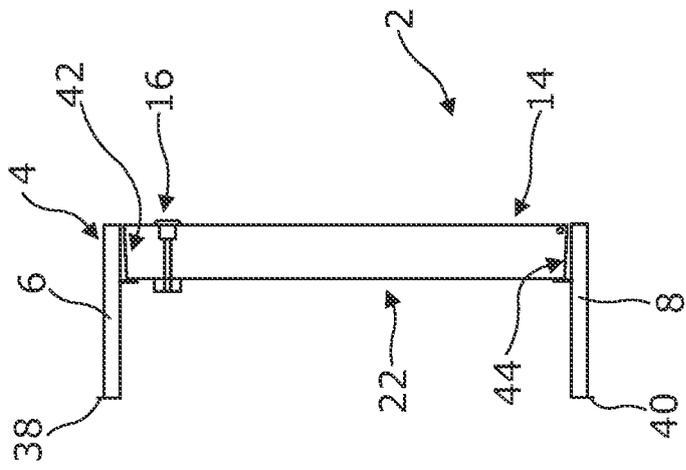


Fig. 2

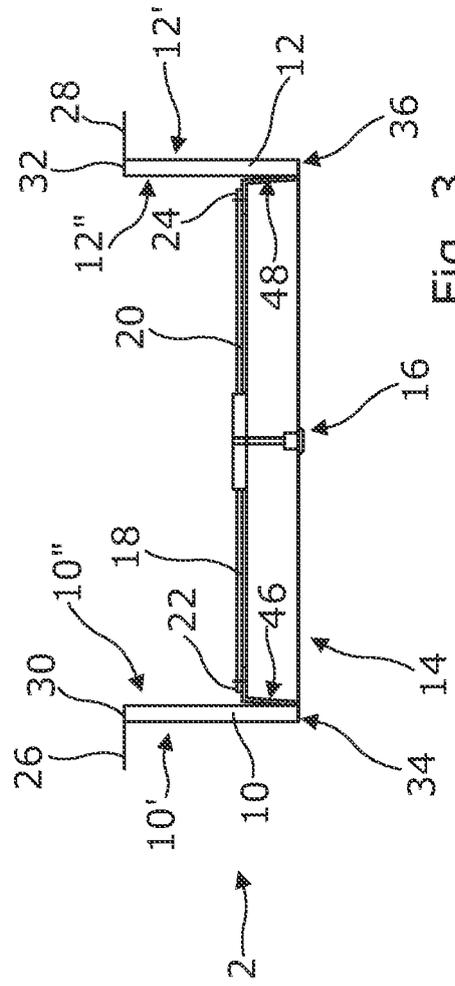


Fig. 3

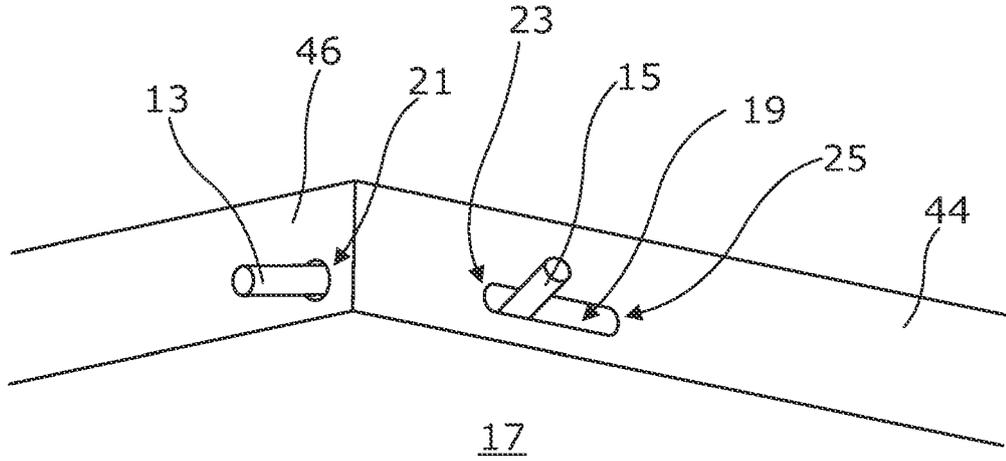


Fig. 4a

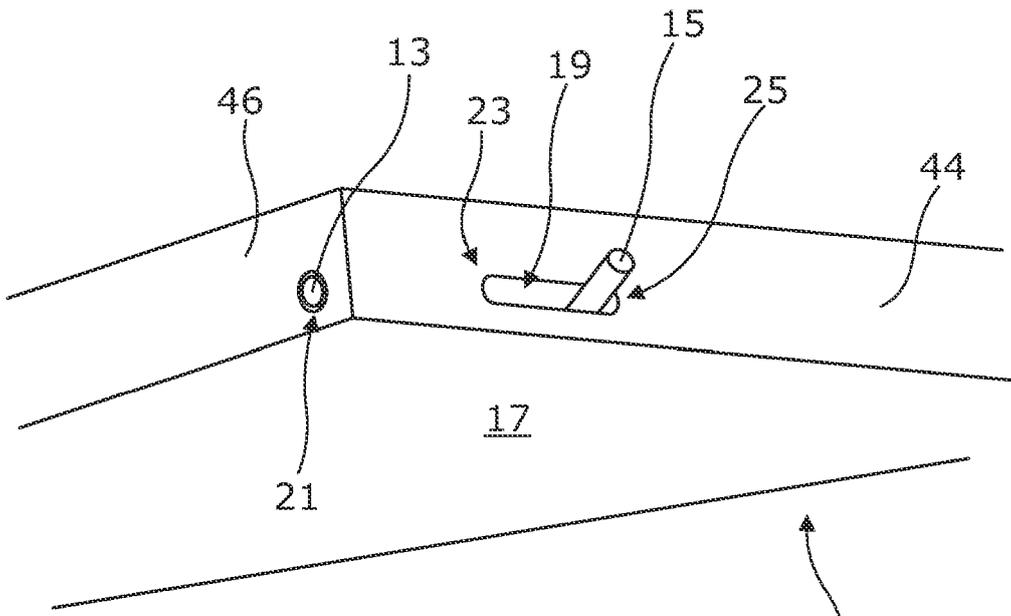


Fig. 4b

28 11 22

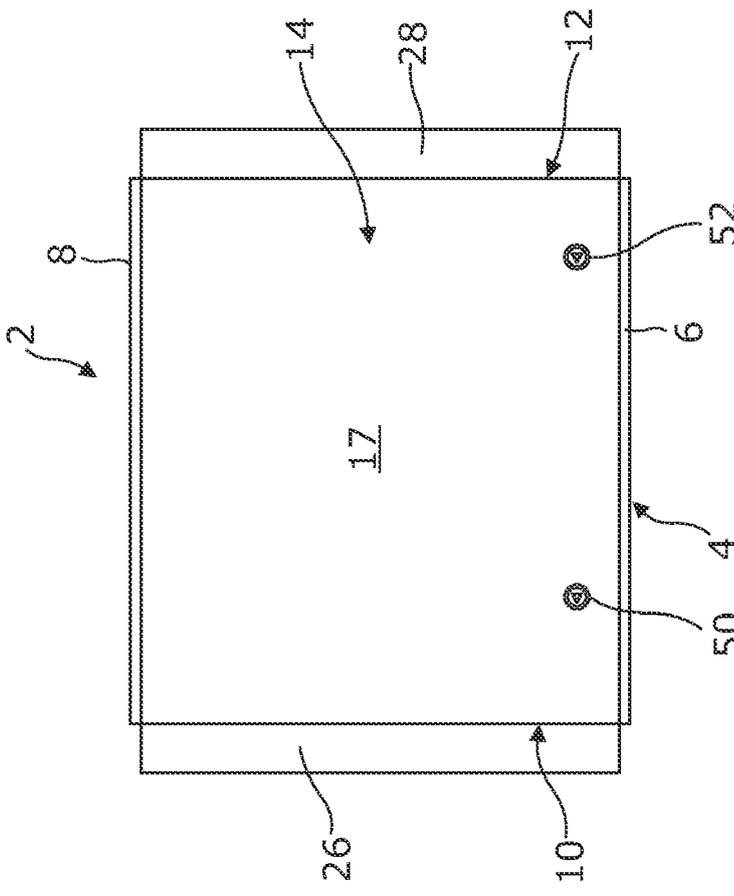


Fig. 5a

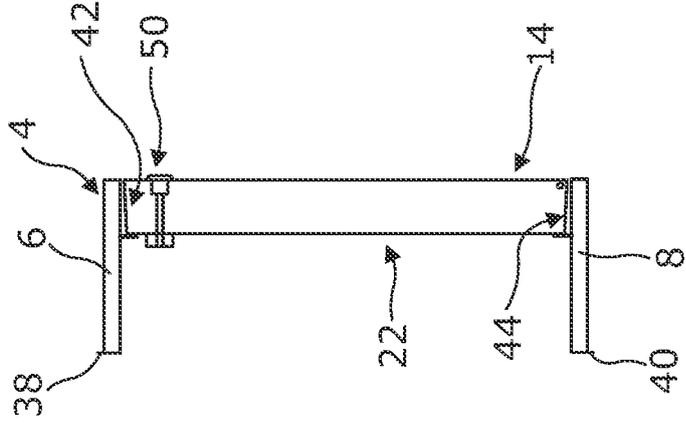


Fig. 5b

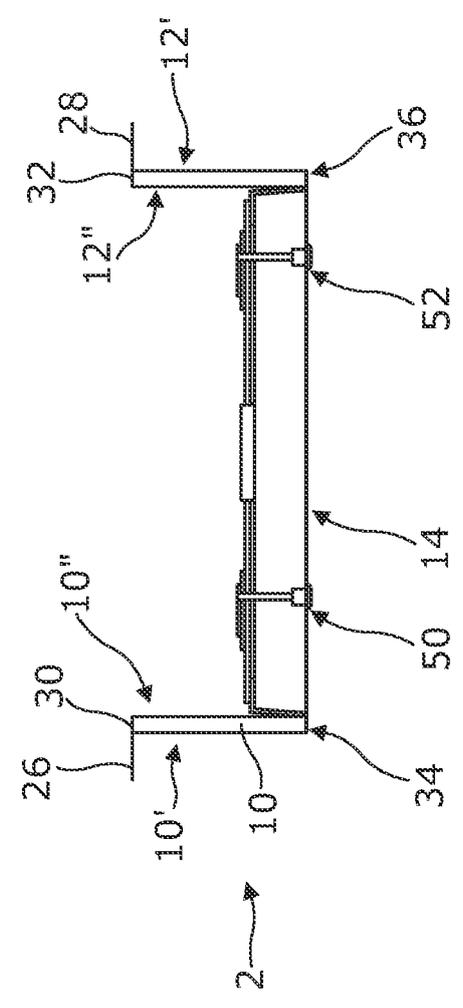


Fig. 5c

## **Electric or Utilities Box and Method of Use and/or Manufacture Thereof**

This invention relates to an electric or utilities box and to a method of use and/or manufacture thereof.

Although the following description refers almost exclusively to an electric meter box for the storage or location of electrical equipment therein, it will be appreciated by persons skilled in the art that the present invention could be used for the location of any equipment or utilities equipment, such as gas, water, internet, telephone and/or the like (hereinafter referred to interchangeably as a utilities meter box or utilities box).

An electric meter box is a secure water-resistant container for storing electrical equipment that is typically located on the exterior of a building or property in use. Conventional electric boxes can either be surface mounted, wherein the box is secured directly to an external wall of the property; or can be built in or flush mounted, wherein the box is recessed within the property wall or external cladding of the property and the front of the box is substantially flush with the property wall or external cladding. However, a problem associated with conventional electric boxes, and particularly the type that are built in or flush mounted, is that they create cold bridging problems. This is where the box creates a break in the thermal insulation of the property or external cladding. Since it is desirable to maximise the thermal efficiency of a property in order to reduce heat loss from the property, to reduce the impact of the property on the environment, and to reduce heating bills for the occupant of the property, the cold bridging issues cause significant problems. In addition, current electric meter boxes are formed from plastics material which can become brittle and easily damaged over time when exposed to extreme environmental conditions.

It is therefore an aim of the present invention to provide an electric or utilities box that overcomes the abovementioned problems.

It is a further aim of the present invention to provide a method of using and/or manufacturing an electric or utilities box that overcomes the abovementioned problems.

It is a yet further aim of the present invention to provide a utilities box or utilities meter box and/or a method of using and/or manufacturing a utilities box or utilities meter box.

According to a first aspect of the present invention there is provided a utilities box according to claim 1.

Thus, the present invention provides an electric or utilities box or meter box with thermal insulation that prevents or reduces the problems associated with cold bridging. The provision of a thermally insulated electric or utilities meter box has never been done before to the best of the applicant's knowledge.

Preferably the utilities box is an electric meter box.

Preferably the at least one cavity is an interior cavity of the box.

Preferably the thermal insulation means is also provided in, on and/or associated with the one or more walls and/or the cavity.

In one embodiment the thermal insulation means is provided inside, within or in the interior of said one or more walls. For example, the thermal insulation means can be encapsulated within the one or more walls defining the electrical and/or utilities meter box.

In one embodiment thermal insulation means is provided inside, within or in the interior of all of the walls of the box and the closure means.

Preferably the thermal insulation means is of a minimum thickness and/or is formed from or includes a material sufficient to reduce or prevent cold bridging, such as for example when the box is located a wall of a building, as a result of the box being present in use.

In one embodiment the thermal insulation means is or includes mineral wool, such as for example ROCKWOOL®.

Preferably the thermal insulation means used is a fire rated thermal insulation material.

In one example, the thermal insulation means is used at a thickness equal to or at least 75mm +/-5mm within the box, the one or more walls and/or closure means of the box. In a preferred example, a thickness equal to or at least 75mm +/-5mm is used in the closure means.

In one example, the thermal insulation means is used at a thickness equal to or at least 25mm +/- 5mm within the one or more walls and/or closure means of the box. In a preferred example, a thickness equal to or at least 25mm +/- 5mm is used in the walls of the box.

In one embodiment the box, the one or more walls and/or the closure means are formed from or include metal, such as for example a powder coated metal. This makes the box strong and robust and is able to withstand extreme environmental conditions without becoming brittle.

Preferably sealing means are provided on and/or associated with the closure means and/or the one or more walls of the box to form an a seal between the one or more walls and the closure means when the closure means is in a closed position in use.

Preferably the sealing means are provided on and/or associated with interior facing surfaces of the box.

Preferably the sealing means are arranged to create an air tight or substantially air tight seal between the one or more walls and the closure means in use.

Preferably the sealing means includes one or more sealing members, rubber strips, gaskets, and/or the like.

Preferably the closure means is movable between an open position, wherein access can be gained to the interior cavity of the box, and a closed position, wherein access to the interior cavity of the box is prevented.

Preferably the closure means is hingedly or pivotably movable between said open and closed positions in use via hinge or pivot means.

Preferably one or more hinge means or pivot are provided on and/or associated with at least a first edge, end or side of the box, the one or more walls and/or the closure means.

Preferably the closure means is arranged to hingedly move or pivot outwardly of the box when moved from the closed position to the open position in use.

In one embodiment the hinge means or pivot means is or includes a quick release mechanism to allow the closure means to be easily removed from and/or replaced on the box.

In one embodiment the hinge or pivot means includes at least one pin or arm member provided on one of the one or more walls or the closure means, and a recess is provided on the other of the one or more walls or the closure means.

Preferably the pin or arm member is locatable in the recess to form a hinged or pivoted position in use.

Preferably the at least one pin or arm member is rotatably, pivotably or hingedly mounted in the recess.

In one embodiment at least two hinge or pivot means, pin or arm members are provided for hingedly mounting the closure means with the one or more walls of the box.

Preferably the at least two hinge or pivot means, pin or arm members are provided at spaced apart locations on the closure means or one or more walls of the box

and/or are further preferably provided on opposite sides, ends or surfaces of the closure means or one or more walls of the box.

Preferably the at least one pin is resilient biased relatively outwardly of the closure means or walls via resilient biasing means.

Preferably the resilient biasing means includes one or more springs, sprung material and/or the like.

Preferably the at least one pin is movably mounted in the closure means or a wall of the box.

Preferably actuation means (or user actuation means) are provided to move the at least one pin between a relatively outwardly protruding position, wherein at least part of the pin can locate in the recess, and a relatively retracted position, wherein at least part of the pin is moved clear of the recess.

Preferably the actuation means are at least partly movably mounted in a slot defined within the closure means or one or more walls.

Preferably the actuation means is slidably mounted in the slot.

In one example, the actuation means is an arm member that is slidably mounted in the slot.

Preferably with the actuation means or arm member in a first position at an end of the slot, the at least one pin is in the relatively outwardly protruding position, and with the actuation means or arm member in a second position, and preferably substantially opposite position to the first position, the at least one pin is in the relatively retracted position.

Preferably the actuation means or arm member is provided on a side, end, edge or surface of the closure means or one or more walls that is transverse or perpendicular to a side, end, edge or surface of the closure means in which the at least one pin the actuation means or arm member is arranged to move in use is provided.

Preferably with the at least one pin in the relatively retracted position, the pin can be removed from the recess and the closure means can be detached from the one or more walls of the box. This allows for quick release of the closure means from the box in use.

In one embodiment at least one pin is movably mounted and at least one pin is fixedly protruding from the closure means or at least one wall.

In one embodiment the at least one movably mounted pin is provided on or associated with an opposite side, end, surface or edge of the closure means to the at least one fixedly protruding pin.

In one embodiment the locking means are provided on or associated with at least one edge, surface, end or wall of the box or closure means opposite to the hinge or pivot means.

In one embodiment two spaced apart locks are provided. The locks are typically provided on opposite sides or edges of the closure means.

In one embodiment sealing means are provided on and/or associated with the locking means, hinge or pivot means and/or lock actuation means to allowing sealing around the same in use. In one example, the sealing means is in the form of an air sealing grommet.

Preferably rotation of the lock actuation means is arranged to move the at least one locking arm in a linear or substantially linear manner.

Preferably the at least one locking arm is moved between the locked and unlocked positions at at least two spaced apart locations (i.e. the locking means provides at least a two point lock).

In one embodiment two separate locking arms are provided and each arm is independently moved between the locked and unlocked positions at two spaced apart locations in use.

In one example, rotation of the lock actuation means is arranged to move at least two locking arms in a linear or substantially linear manner in opposite or substantially opposite directions, thereby allowing the lock actuation means to allow engagement of the locking arms in complementary recesses on opposite sides of the box in use.

Preferably rotation of the lock actuation means is arranged to move the at least two locking arms simultaneously or substantially simultaneously in use.

Preferably one or more outwardly protruding flanges are provided on or associated with the one or more walls of the box. These flanges can be used help to allow attachment of the box to a surface or wall surface in use. As the flanges extend outwardly of the box, this means the attachment of the box to a surface can take place externally of the box, thereby ensuring the thermal insulation of the box is not compromised.

In one embodiment attachment means are provided on and/or associated with the box, one or more walls and/or one or more outwardly protruding flanges to allow attachment of the box to a surface in use.

Preferably the attachment means are arranged to be external to the interior cavity of the box, thereby helping to ensure that cold bridging problems do not occur where the attachment means are located.

In one embodiment at least one flange is provided to protrude outwardly from opposite walls of the box, thereby allowing attachment of the box to a surface via at least two separate and spaced apart locations.

In one embodiment the attachment means includes any or any combination of one or more screws, nuts and bolts, apertures, slots, hooks and/or the like.

In one embodiment the one or more walls of the closure means and/or box are chamfered to provide improved clearance of the closure means with one or more walls of the box when in a closed position and/or to improve water run off if required.

It will be appreciated that reference to a box herein can also be in the form of a frame. Thus, in one example, the box can include side walls, end walls and a rear wall joined to the side and end walls, thereby forming a tray like element. The opening can be defined opposite to the rear wall and the interior cavity of the box can be wholly enclosed or substantially wholly enclosed within the side walls, end walls, rear wall and closure means when in a closed position in use. The electrical or utilities equipment can be located entirely within the box in this example.

In an alternative example, the box can be in the form of a frame including side walls and end walls but no, or only a partial, rear wall joined to the side and end walls. The frame in this example defines an opening through the frame. The closure means is associated with a front part of the opening. The wall on which the box is to be mounted in use forms a rear wall closure for the frame, thereby creating a box with an interior cavity when fitted to a surface in use. The electrical or utilities equipment can be located on the mounting wall and the frame surrounds the equipment ensuring the equipment is located within the box in this example.

According to a second aspect of the present invention there is provided a method of using and/or manufacturing a utilities box according to claim 19.

According to a further embodiment of the present invention there is provided a utilities or electric meter box.

According to a yet further embodiment of the present invention there is provided a method of using and/or manufacturing a utilities or electric box.

According to further embodiments of the present invention there is provided an electric or utilities frame and/or a method of using and/or manufacturing an electric or utilities frame.

Embodiments of the present invention will now be described with reference to the following figures, wherein:

Figure 1 is a front plan view of an electric meter box according to an embodiment of the present invention;

Figure 2 is a first vertical cross sectional view of the electric meter box in figure 1;

Figure 3 is a second horizontal cross sectional view of the electric meter box in figure 1;

Figure 4a is a simplified view of a hinge on the closure means according to one embodiment in a relatively outwardly protruding position;

Figure 4b is a simplified view of the hinge of the closure means shown in figure 4a in a relatively retracted position; and

Figures 5a-5c show a front plan view, a first vertical cross sectional view and a second horizontal cross sectional view of a utilities box according to a further embodiment of the present invention.

Referring to the figures, there is illustrated an electric meter box 2 according to an embodiment of the present invention.

The electric meter box in this example is in the form of a frame 4. In this illustrated example, the frame is square or substantially square shaped. However, it will be appreciated that the electric meter box and/or frame could be of any suitable shape, design and/or dimensions as required.

The frame 4 is defined by two opposing side walls 6, 8 and two opposing end walls 10, 12. In this illustration, the end walls 10, 12 are arranged to be perpendicular or substantially perpendicular to the side walls 6, 8.

The dimensions of the end walls 10, 12 and side walls 6, 8, will typically depend on the thickness of the wall, cladding or render that the frame or box is to be located in and whether the box/frame is to be surface mounted or flush (or substantially flush) mounted in use.

An opening (not shown) is defined between the end and side walls (6, 8, 10, 12). Closure means in the form of a door 14 is hingedly mounted to opposite walls of the frame 4 to allow selective access through said opening. The door 14 is movable between an open position, wherein access through said opening can be gained, and a closed position, wherein access through said opening is prevented.

Referring to figures 4a and 4b, an example of a hinge arrangement is shown which provides a quick release mechanism for quick removal of the door 14 from the frame 4. At least one of the hinges on the door includes a pin 13 provided on an end 46 of the door that is rotatably mounted in a complementary shaped recess (now shown) defined in the frame 4. The pin 13 is resiliently biased outwardly of the door 14 via a spring mechanism located internally of the door to form a hinged position. Actuation means are provided to move the pin 13 between the relatively outwardly protruding position, as shown in figure 4a, wherein the pin 13 protrudes outwardly of aperture 21 defined in end 46, and a relatively retracted position, as shown in figure 4b, wherein pin 13 is recessed within aperture 21 in this example. With the pin 13 in the relatively retracted position, this forms an unhinged position, allowing removal of the door 14 from the frame 4.

The actuation means includes actuation arm 15 that is slidably mounted in a slot 19 defined on side 44, which is perpendicular to the end 46 on which the pin 13 is located. In use, a user slidably moves actuation arm 15 from a first position, wherein arm 15 is located at an end 23 of the slot 19 closest to the pin 13, to a second opposite position, wherein arm 15 is located at an opposite end 25 of the slot 19. In the first position, the pin 13 protrudes relatively outwardly from the door 14 and in the second position, the pin 13 is relatively recessed with respect to door 14, thereby allowing removal of the door 14 from the frame in use.

A further hinge can be provided on the door. This can be a quick release hinge as described above or it can be a fixed pin that is fixed in an outwardly protruding position with respect to door 14.

In figures 1-3, locking means in the form of a triangle lock 16 in this example is provided on a front surface 17 of door 14 to lock the door 14 in a closed position in use. The triangle lock 16 is movable between a locked position, wherein the door 14 is maintained in a closed position and cannot be opened, and an unlocked position, wherein the door 14 can be moved between open and closed positions.

Sealing means, such as a sealing grommet (now shown), can be provided on or associated with the triangle lock 16 to prevent water and/or air from passing through said lock in use.

The locking means also includes two locking arms 18, 20 provided adjacent a rear surface 22 of the door 14. The triangle lock 16 acts as actuation means for moving the locking arms 18, 20 between the locked and unlocked positions in use. More particularly, rotation of triangle lock 16 causes linear motion of locking arms 18, 20 between the locked and unlocked positions. In this example, the two locking arms 18, 20 move simultaneously or substantially simultaneously on actuation of the triangle lock 16. The free end of each locking arm 18, 20 includes a pin 22, 24 respectively that engages in a complementary recess defined in end walls 10, 12 of the frame when in the locked position. Thus, a two point lock is provided on the electric meter box to increase the security of the same. This is in contrast to prior art electric meter boxes which typically only have a single point locking mechanism.

In figures 5a-5c, a utilities box 2 is shown having similar features to the electric meter box in figures 1-3. The same reference numerals in figures 5a-5c are used to describe the same features in figures 1-3. However, in this embodiment two separate and independent triangular locks 50, 52 are provided on opposite sides of the door. Each lock can be independently moved between locked and unlocked positions in use. Other locking arrangements could also be used.

Sealing means can be provided between the door 14 and the frame 4 to provide an air-tight or substantially air-tight seal in use.

Outwardly extending flanges 26, 28 are provided on the rear ends 30, 32 of end walls 10, 12 respectively for allowing attachment of the box 2 to a wall surface in use. The flanges extend from the rear ends of end walls 10, 12, opposite to the front ends 34, 36, and are arranged to be parallel or substantially parallel to the door 14 when in a closed position.

Attachment means in the form of apertures (now shown) are defined on flanges 26, 28 to allow the flanges to be attached to a wall surface via screws and/or the like. Other suitable attachment means could be provided to allow attachment of the box 2 to a surface if required.

Outwardly extending flanges 38, 40 can be provided on the rear ends of side walls 6, 8 respectively for increasing the surface area of contact of the box 2 on a wall surface to which the box is attached to in use.

The door 14 is thermally insulated and has thermal insulation means encapsulated between the front surface 17, the rear surface 22, opposing side walls 42, 44 and opposing end walls 46, 48. In the illustrated example the thermal insulation means used in the door is mineral wool or rock wool. A minimum depth in this example of 75mm is used in the door to prevent cold bridging problems. However, any depth of thermal insulation means can be used as required to achieve the required thermal insulation effect. In addition, any type of thermal insulation material can be used.

The side and end walls 6, 8, 10, 12 of the frame 4 are also thermally insulated and have thermal insulation means encapsulated between the opposing front and rear end walls 30, 34 and 32, 36, the opposing walls 10', 10'' making up end wall 10, and the opposing walls 12', 12'' making up end wall 12. In the illustrated example, the thermal insulation means used in the frame walls is mineral wool or rock wool. A minimum depth in this example of 25mm is used in the frame to prevent cold bridging problems. However, any depth of thermal insulation means can be used as required to achieve the required thermal insulation effect. In addition, any type of thermal insulation material can be used.

The side and end walls 42, 44, 46, 48 are chamfered (or have narrowing taper from front surface 17 towards rear surface 22) to improve the fit of the door within the frame opening and to allow any water ingress to drain away.

In one example, the frame/box is formed from metal to provide a strong, rigid container for electrical equipment or utilities equipment that can withstand extreme weather conditions in use.

Thus, it can be seen that the electric meter box or frame or utilities box or frame of the present invention provides a number of significant advantages over conventional electric meter boxes.

## Claims

1. A utilities box, said utilities box having one or more walls defining at least one cavity therebetween, at least one opening defined in and/or between said one or more walls to allow user access to said at least one cavity, and closure means are provided to allow selective closure of said opening in use, and wherein thermal insulation means are encapsulated in at least the closure means of said utilities box; wherein locking means are provided on and/or associated with the closure means which are movable between a locked position, wherein the closure means can be locked in a closed position, and an unlocked position, wherein the closure means can be moved between open and closed positions in use;  
wherein the locking means includes at least one triangular lock including at least one locking arm that is provided adjacent a rear external surface of the closure means and movable between the locked and unlocked positions in use.
2. The utilities box according to any preceding claim, wherein the thermal insulation means is or includes mineral wool.
3. The utilities box according to any preceding claim, wherein the thermal insulation means is used at a thickness equal to or at least 25mm +/- 5mm within the box, the one or more walls and/or the closure means.
4. The utilities box according to any preceding claim, wherein the thermal insulation means is used at a thickness equal to or at least 75mm +/- 5mm within the box, the one or more walls and/or the closure means.
5. The utilities box according to any preceding claim, wherein the utilities box, the one or more wall and/or the closure means are formed from or include metal.

6. The utilities box according to any preceding claim, wherein the closure means is hingedly or pivotably movable between open and closed positions in use via hinge or pivot means.

7. The utilities box according to claim 6, wherein the hinge or pivot means is or includes a quick release mechanism to allow the closure means to be easily removed from or replaced on the box.

8. The utilities box according to claims 6 or 7, wherein the hinge or pivot means includes at least one pin or arm member provided on one of the one or more walls of the box or the closure means, that is locatable in a recess provided on the other of the one or more walls of the box or closure means.

9. The utilities box according to any preceding claim, wherein at least two hinge means, pivot means or pin or arm members are provided at spaced apart locations for hingedly or pivotably mounting the closure means with the one or more walls of the box.

10. The utilities box according to claim 8, wherein the at least one pin or arm member is resiliently biased relatively outwardly of the closure means or one or more walls via resilient biasing means.

11. The utilities box according to any preceding claim, wherein actuation means are provided to move the at least one pin or arm member between a relatively outwardly protruding position, wherein at least part of the pin or arm member can locate in the recess, and a relatively retracted position, wherein at least part of the pin or arm member is moved clear of the recess.

12. The utilities box according to claim 11, wherein the actuation means is slidably mounted in a slot defined within the closure means or one or more walls.

13. The utilities box according to any preceding claim, wherein sealing means are provided on or associated with the closure means, the locking means, the hinge or pivot means, and/or one or more walls of the utilities box to form a seal between the one or more walls and the closure means when the closure means is in a closed position or around the same in use.

14. The utilities box according to claim 13, wherein the sealing means includes one or more sealing members, rubber strips and/or gaskets.

15. The utilities box according to any preceding claim, wherein one or more outwardly protruding flanges are provided on or associated with one or more walls of the box.

16. The utilities box according to any preceding claim, wherein attachment means are provided on or associated with the box, one or more walls and/or one or more outwardly protruding flanges to allow attachment of the box to a surface in use.

17. The utilities box according to claim 16, wherein the attachment means are provided on or associated with an exterior of the box.

18. The utilities box according to any preceding claim, wherein one or more walls of the closure means or box are chamfered so as to improve clearance of the closure means with the one or more walls of the box when in a closed position and to improve water run off if required.

19. A method of using and/or manufacturing a utilities box, said method including providing a utilities box having one or more walls defining at least one cavity therebetween, defining at least one opening in and/or between said one or more walls to allow user access to said at least one cavity, and providing closure means to allow selective closure of said opening in use, said method further including the steps of providing thermal insulation means encapsulated in at least the closure means of said utilities box; providing locking means on and/or associated with the closure means which are movable between a locked position, wherein the closure means can be locked in a closed position, and an unlocked position, wherein the closure means can be moved between open and closed positions;

wherein the locking means includes at least one triangular lock including at least one locking arm that is provided adjacent a rear external surface of the closure means and movable between the locked and unlocked positions in use.