

A LANDING PAD WITH A BUILT-IN FIRE SUPPRESSOR

DESCRIPTION

[0001] The present invention relates to a landing pad, in particular, to a landing pad with a built-in fire suppressor.

[0002] Landing pads are commonly found in airports; on the top of high-rise buildings; and in particular, on marine vessels such as oilrigs and ships, for example. They are primarily utilized by helicopters, and in some instances, by vertical take-off and landing (VTOL) aircraft. Typically, a basic landing pad includes a smooth support surface on which an aircraft lands. The landing pads in airports may be made from steel decks, wooden decks or bitumen, for example, while the landing pads in oil rigs and ships are typically made from steel or aluminium, as opposed to wood, since wood presents a greater fire hazard in the event of an onboard fire.

[0003] The aforesaid basic landing pads, regardless of whether they are land-based or sea-based, are nonetheless susceptible to damage in the event of an ignition of aviation fuel. In this respect, aviation fuel may be spilt over a landing pad as a result of negligence during a refuelling process or in the event of an aircraft crashing on the pad itself. As aviation fuel typically burns at approximately 1100°C, burning aviation fuel impose greater danger to people on the landing pad or on board of an aircraft and, in addition, easily causes severe structural damage to landing pads of the above-mentioned basic design as there is no fire suppression or fire retardation means provided

with these basic landing pads. For example, when a fire breaks out on a basic landing pad as described above, the fire service (local or airport) is usually relied on to extinguish the fires. However, as the ignition of aviation fuel is a sudden and violent event, usually the time taken for the fire services to respond is too long to prevent significant damage from taking place to the landing pad. In the case of a marine vessel, a fire on its basic landing pad could easily spread to the rest of the vessel resulting in catastrophic consequences.

[0004] To overcome the aforesaid difficulty, US patent 4,836,472 discloses a landing pad that includes a passive fire-fighting system. Extruded aluminium beams on a base support an upper platform for supporting an aircraft. The support aluminium beams provide a space between the base and the upper platform. The upper platform is a grating, which permits fuel to pass through it. The support beams also support strips of high-heat conductive material below the upper platform. Between the strips of conductive material are deck plates. The conductive material conducts localized heat from one location thereon to another location to give a more even temperature spread across the conducting strips. The deck plates catch fuel that passes through the conducting strips and causes the fuel to flow away from the deck. However, in the event that the upper platform is on fire, there is no means provided for suppressing such a fire.

[0005] In yet another attempt to overcome the aforesaid difficulties in extinguishing aviation fuel based fires, US patent 6,481,644 B1 discloses an

active fire-fighting device. The device is a sprinkler that may be used in conjunction with the landing pads, as described earlier. However, such a sprinkler device on its own requires the use of a foam retardant chemical to put out aviation fuel fires and cannot solely rely on using water or seawater to extinguish such fires, which would be the most readily available source of fluid for sea-going vessels such as oilrig platforms and ships.

[0006]As such, despite the above-mentioned attempts at providing a landing pad with adequate fire hazard suppression, there still exists a need for a landing pad that is efficient in fire hazard suppression, portable, scalable in size and cost-effective to produce. Such a landing pad, as defined in the claims appended below, overcomes the above-mentioned difficulties.

[0007]The landing pad of the present invention includes at least one first interlocking unit. The interlocking unit includes a landing surface, wherein the landing surface has openings distributed thereon. The landing surface of the interlocking unit also includes at least one interlocking mechanism located along its periphery. The interlocking mechanism is adapted to interconnect with a corresponding interlocking mechanism from another interlocking unit. A hollow chamber is located beneath the landing surface such that the hollow chamber is in fluid communication with the landing surface via the openings distributed thereon. In this context it is noted that the landing pad of the present invention allows for the first time plain water to be used an extinguishing medium for hydrocarbon based (fuel based) fire. This is in particular advantageous as usually water only exacerbates a hydrocarbon

based fire causing it to spread even further. Thus, the use of water as the only fire extinguishing means in connection with a landing pad is also contemplated in the present invention. In this context it is also noted that the built-in fire suppressor of the landing deck can serve the purpose to either suppress or retard (the development) of a fire (in case the fire is not completely eliminated or also the purpose to eliminate or extinguish the fire completely, usually in connection with the use of water and/or another fire extinguishing medium.

[0008] A heat conductive layer is arranged within the hollow chamber such that it spans across the hollow chamber thereby subdividing the hollow chamber into an upper section and a lower section. The upper section is in fluid communication with the landing surface via the openings while the lower section is in fluid communication with the upper section via the heat conductive layer. The heat conductive layer that sub-divides the hollow chamber is adapted to dissipate heat from a localized point thereon to over the entire heat conductive layer. This creates a more even temperature spread over the heat conductive layer such that any localized heat source, such as those from burning aviation fuel for example, is dissipated rapidly.

[0009] In one embodiment, the interlocking unit may also include at least one sprinkler nozzle located proximate to the landing surface of the at least one interlocking unit. The sprinkler nozzle is connected to a fluid reservoir and is adapted to emit a spray of fluid over the entire landing surface when activated.

[0010] In one embodiment of the landing pad, the at least one interlocking mechanism located along the periphery of the landing surface is complementary in shape to the corresponding interlocking mechanism to which it is adapted to interconnect to. In other words, a mechanism similar to that of a plug and socket mechanism may be used. In one particular embodiment of the interlocking mechanism, the complimentary shaped interlocking mechanism is adapted to receive and interconnect with the corresponding interlocking mechanism such that the landing surface remains planar. This ensures that there are no, or minimal, protrusions along the landing surface of the landing pad.

[0011] Returning to the heat conductive layer that spans across the hollow chamber, said heat conductive layer typically is or includes a finely meshed gauze. This meshed gauze can either comprise a plurality of layer (i.e. two or more, for example up to about a hundred layers) or can also consist of a single layer (single layer gauze). The finely meshed gauze, regardless of being a single layer gauze or comprising a plurality of layers, may be fabricated from any heat conductive material, for example, a conductive metal, metal alloy or carbon fibre. Suitable (metallic) materials include, but are not limited to copper, stainless steel or aluminium, for example. The mesh size of this gauze (which can also be considered to be a perforated screen) is chosen such that it allows the burning fuel to be dispersed into smaller droplets ("atomized") when the fuel drops through the gauze. For this purpose, the mesh size is typically chosen to be in the millimeter range,

depending on the octane rating of the fuel. The higher the octane rating of the fuel is, typically the finer the mesh size is in order to dissipate the fuel/ the energy associated with the higher octane rating. In illustrative embodiment the mesh size of the gauze can be in the range of about 0.01 mm to about 2.5 mm or in the range of about 0.04 mm to 1.9 mm. The thickness of the (single layer) mesh may also be chosen depending on the octane rating of the fuel, and can for example be in the millimetre range, for example between 0.5mm to 2.0 mm or 0.7mm to 1.6 mm. The finely meshed gauze is usually held in a frame which gives the gauze rigidity and allows it to be slid into a tight fit inside the interlocking unit. This frame is usually made of a material such as stainless steel to prevent corrosion. No other parts are required for mounting the gauze. The gauze can be continuous, wherein the frame allows the gauze to be joined (similar to a picture frame) to allow continuity without gaps.

[0012] The use of a finely meshed gauze increases the area of contact between the heat conductive layer and any flammable liquid flowing into the hollow chamber from the landing surface. This allows the heat conductive layer to cool the flammable liquid by rapidly dissipating heat from it. This is especially important in the situation where the flammable liquid is burning as it enables the fire to be put out more easily. Furthermore, once the fire is put out, the use of the finely meshed gauze also permits the then cooled flammable liquid to flow on into the lower chamber for further processing as described later on below.

[0013] Turning now to the sprinkler nozzle, said sprinkler nozzle may be integrally located within each interlocking unit such that it lies along the central axis or rotation of said interlocking unit. This arrangement may be used in the case where each interlocking unit is sufficiently large such that it requires its own corresponding sprinkler nozzle, or as in the case where merely one or two interlocking units are used to form the entire landing pad.

[0014] In an alternative embodiment, the at least one sprinkler nozzle may be located adjacent to the periphery of at least two interconnected interlocking units. In this embodiment, the sprinkler nozzle is equidistant from the centres of rotation of the respective at least two interlocking units. This arrangement of the sprinkler nozzle may be used where the interlocking units used to form the landing pad are of a smaller size such that the discharge from a single sprinkler nozzle centrally located with respect to the two or more adjacent interlocking units is sufficient to douse all the interlocking units. In this and all other embodiments, it should be noted that the sprinkler nozzle extends up to the landing surface of the interlocking units such that a relatively flat and planar landing surface is achieved. In other words, the sprinkler nozzle does not protrude intrusively into the plane of the landing surface.

[0015] In one exemplary embodiment, the sprinkler nozzle may be secured to the underside of the landing surface of the interlocking unit. Depending upon the operational theatre of the landing pad, the sprinkler nozzle may be connected to a seawater fluid reservoir, fresh water fluid reservoir or a foam fluid reservoir, for example.

[0016] In all the embodiments described herein, the lower section of the hollow chamber is adapted to collect and drain away fluid received from the landing surface via the heat conductive layer. The drained fluid may include a mixture (immiscible or miscible) of flammable liquid and a flushing medium from the spray emitted by the sprinkler nozzle. The flammable liquid may be aviation fuel or any other combustible liquid while the flushing medium is typically water, seawater or foam, for example. As such, the lower section of the hollow chamber may include a device for separating and/or purifying the drained flammable liquid in order that it may be recycled.

[0017] The landing pads of the various embodiments described herein may also include a porous or grated safety net arranged over the landing surface. The safety net may take any shape, be it a regular or irregular shape. Examples of regular shapes include a circular shape or a polygonal shape such as an octagon, a square, a pentagon or a hexagon, for example. Where the landing pad includes such a safety net, said safety net serves the purpose of forming an additional homogeneous surface over the landing surface(s) of the interlocking unit(s) and may be used to create a non-skid surface for the aircraft wheels.

[0018] In a further embodiment of the invention, the landing pad may include at least one second interlocking unit. The second interlocking unit is identical

to the first interlocking unit, and interconnects with the interlocking mechanism of the first interlocking unit. In doing so, the landing surface of the at least one first interlocking unit and the landing surface of the at least one second interlocking unit combine to form an enlarged landing surface. This embodiment may be employed in situations where it is difficult to transport a single large interlocking unit to form the landing pad. Instead, multiple (two or more) smaller and more portable interlocking units may be used in combination with each other, as described above, to form the landing pad.

[0019] The at least one first interlocking unit and the at least one second interlocking unit are typically fabricated from metal. The metal can, for example, be selected from the group consisting of aluminium, titanium, stainless steel or alloys thereof. In one embodiment, the metal or metal alloy is non-corrosive.

[0020] In one illustrative embodiment, the landing pad with a built-in fire suppressor includes a central interlocking unit. The central interlocking unit is identical to the interlocking units described above and includes a landing surface, wherein the landing surface has openings distributed thereon. The interlocking unit also has at least one interlocking mechanism located along its periphery, said interlocking mechanism being adapted to interconnect with a corresponding interlocking mechanism. The interlocking unit has a hollow chamber located beneath the landing surface. The hollow chamber is in fluid communication with the openings. A heat conductive layer is arranged to span across the hollow chamber thereby subdividing the hollow chamber into an

upper section and a lower section, wherein the lower section is in fluid communication with the upper section via the heat conductive layer, and wherein the heat conductive layer is adapted to dissipate heat from a localized point thereon to over the entire heat conductive layer.

[0021] The landing pad of this illustrative embodiment also includes six peripheral interlocking units identical to the central interlocking unit. However, in other embodiments, three, four or even seven or more peripheral interlocking units may be used, for example. The six peripheral interlocking units interconnect, via their respective interlocking mechanisms, with the central interlocking unit such that the peripheral interlocking units are evenly distributed around the central interlocking unit thereby combining to form an enlarged substantially planar landing surface.

[0022] In one example of this illustrative embodiment, the landing pad further includes at least one sprinkler nozzle located proximate to the landing surface of the central and peripheral interlocking units. The sprinkler nozzle is connected to a fluid reservoir and said sprinkler nozzle is adapted to emit a spray of fluid over the enlarged substantially planar landing surface.

[0023] In another example of the illustrative embodiment, the at least one sprinkler nozzle is integrally located within and substantially along the central axis of rotation of the central and peripheral interlocking units and extends up to the landing surface of each of the respective interlocking units. In yet another example of the illustrative embodiment, the at least one sprinkler

nozzle is located adjacent to the periphery of the central interlocking unit and at least one of the peripheral interlocking units such that the sprinkler nozzle is substantially equidistant from the centres of rotation of the central interlocking unit and the at least one peripheral interlocking unit, and wherein that the sprinkler nozzle extends up to the landing surface of each of the respective interlocking units.

[0024] The following illustrations and accompanying description serve to further aid in the clarity and understanding of the invention. However, it should be noted that the scope of the invention is by no means limited to the various exemplary embodiments illustrated hereafter.

[0025] **FIG. 1** is a perspective view of an exemplary embodiment of a landing pad;

[0026] **FIG. 2** is a top view of the landing pad of **FIG. 1**;

[0027] **FIG. 3** is a top sectional view of the exemplary embodiment of **FIG. 1**;

[0028] **FIG. 4** is a cross-sectional view of another exemplary embodiment of an interlocking unit;

[0029] **FIG. 5** is a perspective view of another exemplary embodiment of a landing pad that includes the interlocking unit of **FIG. 4**;

[0030] **FIG. 6** is a top view of the landing pad of **FIG. 5**;

[0031] **FIG. 7** is a cross-sectional view of an exemplary embodiment of the landing pad of **FIG. 5**; and

[0032] **FIG. 8A** and **FIG. 8B** are exemplary embodiments of interlocking mechanisms that may be fitted to the interlocking unit of **FIG. 4**.

[0033] **FIG. 1** is a perspective view of an exemplary embodiment of a landing pad **10**. In this exemplary embodiment, the landing pad **10** includes seven interlocking units **12**. Each interlocking unit **12** has a landing surface that is described in detail later below. The interlocking units **12** are assembled such that one central interlocking unit **12a** is surrounded with the remaining six interlocking units **12**. The landing surface of each interlocking unit **12** combines with its adjacent interlocking unit **12** to form a collective landing surface of the landing pad **10**.

[0034] In the centre of each interlocking unit **12** is a sprinkler nozzle **16**. The sprinkler nozzle **16** located beneath the interlocking units **12** is connected to a fluid reservoir system (not shown). The tip of the sprinkler nozzle **16** extends up to the surface of the landing pad **10**. The tip does not protrude into the plane of the landing surface thereby allowing the landing surface to retain its generally planar surface. A safety net **14** is further arranged over the landing surface formed collectively by the seven interlocking units **12**. The safety net

14 shown in Fig. 1 is of octagonal shape. However, as mentioned before, the safety net can adopt any regular or irregular shape.

[0035]FIG. 2 is a top view of the landing pad of **FIG. 1**. As mentioned, the overall shape of the landing pad **10** in this exemplary embodiment is octagonal. In other exemplary embodiments, the shape of the landing pad may be of a different polygonal shape such as of tetrahedral, pentagonal square or hexagonal shape, for example.

[0036]FIG. 3 is a sectional view of the exemplary embodiment of **FIG. 1** from the top. As mentioned, the interlocking unit **12** includes a landing surface **122**. Dispersed over the landing surface **122** are numerous openings or holes **123**. The holes **123** allow for fluid to pass through the landing surface **122**, into the interlocking unit **12** and onto a porous or grated heat conductive layer **124**, which is described in greater detail with respect to **FIG. 4** below.

[0037]FIG. 4 is a cross-sectional view of an exemplary embodiment of an interlocking unit **12**. In this exemplary embodiment of the interlocking unit **12**, the sprinkler nozzle **16** is not shown. In this exemplary embodiment of the interlocking unit **12**, the landing surface **122** has a pair of complementary interlocking mechanisms **32** and **34** located on its periphery. The interlocking unit includes a hollow chamber beneath the landing surface **122**. The hollow chamber has the heat conductive layer **124** arranged therein such that said heat conductive layer **124** spans across the hollow chamber and sub-divides the hollow chamber into an upper chamber **126** and a lower chamber **128**.

[0038] The upper chamber **126** is in fluid communication with the openings **123** of the landing surface **122**. Due to the fluid communication between the upper chamber **126** and the openings **123**, fluid, such as water or fuel, for example, when dispersed on the landing surface **122**, flows through the openings **123** and into the upper chamber **126**. In the upper chamber **126**, the fluid then comes into contact with the heat conductive layer **124** which acts to dissipate localized heat from the fluid to over the span of the entire heat conductive layer **124**. The heat conductive layer may be a single layer gauze or mesh with a mesh size of about 0.01 mm to 2.5 mm and a thickness of about 0.5mm to 2.0 mm. Also indicated in **Fig. 4** is a frame **48** into which the gauze/heat conductive layer **124** is mounted by a tight fit mechanism.

[0039] Following the dissipation of localized heat by the heat conductive layer **124**, the now cooled fluid further flows down into the lower chamber **128** via the porous or grated heat conductive layer **124**. In the lower chamber **128**, the fluid (which may be a mixture of aviation fuel and seawater, for example) is collected and may be subjected to separation and purification processes that may allow the aviation fuel to be recycled. In one embodiment, the collected aviation fuel may be routed to an oily water separator unit which may be situated below the landing pad **10**, at a safe area.

[0040] **FIG. 5** is a perspective view of another exemplary embodiment of a landing pad **40** including the interlocking unit **42** similar to that of **FIG. 4**. In this exemplary embodiment, the landing pad **40** includes four of such

interlocking units **42**. It should be noted that depending on operational requirements, more than four interlocking units **42** may be used to form the landing pad **40**. This exemplary embodiment also includes a sprinkler nozzle **46** centrally located between the four interlocking units **42** such that when activated, the sprinkler nozzle **46** emits a spray that covers the four interlocking units **42** that surround it. As in the previous embodiment of **FIG. 1**, the interlocking units are covered with an (optional) safety net **44** illustrated by broken lines.

[0041]FIG. 6 is a top view of the landing pad of **FIG. 5**. From this view, the arrangement of the interlocking units **42** with respect to the sprinkler nozzle **46** can be better appreciated. As shown, each of the interlocking units **42** engages with two other interlocking units **42** and if necessary, with the sprinkler nozzle **46** as well. As in the previous exemplary embodiment, the sprinkler nozzle **46**, in particular its head, does not protrude above the collective landing surface formed by the combination of the four interlocking units **42** thereby giving rise to a relatively flat collective landing surface covered by the safety net **44**.

[0042]FIG. 7 is a cross-sectional view of the exemplary embodiment of the landing pad of **FIG. 5**. In this embodiment, four interlocking units **12** are arranged in a line abreast arrangement. A sprinkler nozzle **16** is located between the two interlocking units **12** located in the middle of said line abreast arrangement. A sprinkler control unit **164** is affixed to the base of the two interlocking units **12** located in the middle of said line abreast arrangement via

securing elements **166**. When in use, the sprinkler nozzle **16** is capable of discharging a spray of fluid (water, seawater or foam) that covers the four interlocking units **12** as illustrated by the broken lines.

[0043] In the event where aviation fuel or any other flammable liquid, which may be already burning, is dispersed on the landing surface **122** of the interlocking units **12**, the sprinkler nozzle **16** discharges a spray of fluid, typically water, and flushes the flammable liquid down into the upper chamber **126** of the interlocking unit **12**. This is possible since the flammable liquid (such as aviation fuel) is usually immiscible with water and can be washed through the openings **123** of the landing surface **122**. Once within the upper chamber **126**, the mixture of the flammable liquid and water contact the heat conductive layer **124**. If the flammable liquid has been burning, the heat conductive layer **124** conducts the heat localized at the burning flammable liquid such that the heat is distributed across the entire heat conductive layer **124**. The rapid distribution of heat reduces the temperature of the flammable liquid and allows the flames to be put out. Subsequently, the flammable liquid and the water used to flush said flammable liquid continue to flow into the lower chamber **128** where they may be collected and subjected to separation and purification methods for recycling purposes and/or safe disposal.

[0044] **FIG. 8A** and **FIG. 8B** are exemplary embodiments of interlocking mechanisms that may be fitted to the interlocking unit of **FIG. 4**. In **FIG. 8A**, the periphery of landing surfaces **122** of two respective interlocking units includes interlocking mechanisms **222a** and **222b**, respectively. Interlocking

mechanism **222a** and **222b** are complimentary in shape to each other, i.e. when they are brought into contact with each other, they form a matching fit, that does not protrude into the landing surfaces **122**. The two interlocking mechanisms **222a** and **222b** both include through-holes **228**. As shown in **Fig. 8A**, when the interlocking mechanisms **222a** and **222b** are brought together to form a matching fit, the respective through-holes **228** form a single combined through-hole through which pin **226** can be threaded through to secure the interlocking mechanisms **222a** and **222b** together.

[0045]FIG. 8B illustrates another exemplary embodiment of an interlocking mechanism that may be used in conjunction with the landing pad. In this exemplary embodiment, the landing surfaces **122** each have identical interlocking mechanisms **224** attached to their periphery. The interlocking mechanisms **224** are brought into contact and are held in place by pins **226**. It should be noted that the shape of the interlocking mechanisms **224** is adapted to accommodate the pins **226** such that there is no protrusion of the pins into the landing surface **122** of the interlocking units shown in **Fig. 8B**.

[0046] As mentioned earlier, the above description of the various exemplary embodiments of the present invention merely serve to aid in the understanding of the principle behind the invention. The present invention is not to be construed as being limited to the illustrated embodiments but rather, to the extent as defined in the claims that follow.

What is claimed is:

1. A landing pad with a built-in fire suppressor comprising:
 - at least one first interlocking unit, said interlocking unit comprising:
 - a landing surface, wherein the landing surface comprises:
 - openings distributed thereon; and
 - at least one interlocking mechanism located along its periphery, said interlocking mechanism being adapted to interconnect with a corresponding interlocking mechanism;
 - an integrally formed hollow chamber located beneath the landing surface and in fluid communication with the openings; and
 - a heat conductive layer arranged to span continuously across the hollow chamber thereby subdividing the integrally formed hollow chamber into an upper section and a lower section, wherein the lower section is in fluid communication with the upper section via the heat conductive layer, and wherein the heat conductive layer is adapted to dissipate heat from a localized point thereon to over the entire heat conductive layer, wherein the heat conductive layer is a finely meshed gauze, and the mesh size of the finely meshed gauze is adapted such that fluid dropping through the finely meshed gauze is atomized.
2. The landing pad of claim 1, further comprising at least one sprinkler nozzle located proximate to the landing surface of the at least one first

interlocking unit, wherein the sprinkler nozzle is connected to a fluid reservoir and said sprinkler nozzle is adapted to emit a spray of fluid over the entire landing surface.

3. The landing pad of claim 2, wherein the at least one sprinkler nozzle is integrally located within and substantially along the central axis or rotation of the at least one interlocking unit and extends up to the landing surface of said interlocking unit.
4. The landing pad of claim 2, wherein the at least one sprinkler nozzle is located adjacent to the periphery of at least two interlocking units such that the sprinkler nozzle is substantially equidistant from the centres of rotation of each of the respective at least two interlocking units and wherein that the sprinkler nozzle extends up to the landing surface of the respective interlocking units.
5. The landing pad of claim 1, further comprising at least one second interlocking unit, wherein the second interlocking unit is identical to the first interlocking unit, and interconnects with the interlocking mechanism of the first interlocking unit such that the landing surface of the at least one first interlocking unit and the landing surface of the at least one second interlocking unit combine to form an enlarged landing surface.
6. The landing pad of any of the preceding claims, further comprising an polygonal porous safety net arranged over the landing surface.

7. The landing pad of any of the preceding claims, wherein the lower section of the hollow chamber is adapted to collect and drain away fluid received from the landing surface via the heat conductive layer.
8. The landing pad of any of the preceding claims, wherein the finely meshed gauze has a mesh size in the range of about 0.01 mm to about 2.5 mm.
9. The landing pad of claim 1 or claim 8, wherein the gauze consists of a single layer.
10. The landing pad of claim 8 or 9, wherein the finely meshed gauze is fabricated from a heat conductive material.
11. The landing pad of claim 8 or 9, wherein the material is selected from a metal or a metal alloy.
12. The landing pad of claim 10, wherein the metal or metal alloy comprises copper, aluminium, or stainless steel or aluminium.
13. The landing pad of any of the preceding claims, wherein the at least one first interlocking unit is fabricated from a metal.
14. The landing pad of claim 5, wherein the at least one second interlocking unit is fabricated from a metal.

15. The landing pad of claim 13 or 14, wherein the metal is selected from the group consisting of aluminium, titanium, stainless steel or alloys thereof.
16. The landing pad of any of the preceding claims, wherein the fluid in the fluid reservoir connected to the sprinkler nozzle is seawater, water or foam.
17. The landing pad of any of the preceding claims 2 to 16, wherein the sprinkler nozzle is secured to the underside of the landing surface.
18. The landing pad of any of the preceding claims, wherein the at least one interlocking mechanism located along the periphery of the landing surface is complementary in shape to the corresponding interlocking mechanism to which it is adapted to interconnect to.
19. The landing pad of claim 18, wherein the complimentary shaped interlocking mechanism is adapted to receive and interconnect with the corresponding interlocking mechanism such that the landing surface remains planar.